

AUGUST 2023

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## AI already transforming hiring process

As players throughout the supply chain scramble to deploy artificial intelligence (AI) tools, they're discovering they also need to alter their hiring practices.

In a recent workplace survey, 59% of employers said AI has caused them to prioritize different skills when recruiting, with many companies shifting toward skills-based hiring instead of degree-based hiring. The findings come from Cengage Group, a Boston-based education technology and workforce training company, whose "2023 Employability Report" surveyed 1,000 recent graduates and 1,000 U.S. hiring decision-makers. According to Cengage, 50% of employers admit they've dropped two- and four-year degree requirements for entry-level positions (a 32% increase over 2022) and started prioritizing softer skills and previous job experience (66%).

Recent graduates have also noticed the change, with just 41% saying their program had taught them skills needed for their first job—down from 63% who said the same in 2022. The report further found that while 65% of these graduates are eager for training on working alongside AI, more than half (52%) say competition from AI has them questioning how prepared they are for the workforce.

"The workplace has changed rapidly in the last few years, and now we are witnessing a new shift as AI begins to reshape worker productivity, job requirements, hiring habits, and even entire industries," Cengage CEO Michael Hansen said in a release. "With new technology comes both new uncertainties and new opportunities for the workforce, and educators and employers must do more to prepare today's workers for these technological shifts." □

## Turn down the volume!

A warehouse mapping exercise typically involves plotting the location of assets like racks, shelves, and inventory or temperature and humidity levels in various zones. But systems integrator Dematic is now adding another variable to the mix: acoustic hazards.



The Atlanta-based company has introduced its "Noise Portfolio," a comprehensive solution to address loud environments like distribution centers and protect workers' hearing. The new offering includes before-and-after 3D noise mapping audits throughout a facility as well as remediation measures that can reduce noises at their source by up to 15 decibels.

According to Dematic, its platform identifies acoustic hazards in much the same way a heatmap identifies temperature hazards. Dematic then builds a noise model to simulate how upgrading equipment would reduce noise levels. The company recommends upgrades and installs quiet rollers, slats, and conveyors as needed. Dematic conducts a second test after the installation to demonstrate the difference the upgrades have made.

The process can improve worker health, safety, and job satisfaction as well as boost morale and productivity, the company says. □

## Robot joins airport security squad

Cargo theft is a challenge anywhere workers handle valuable materials or merchandise, but managers at Hong Kong Air Cargo Terminals Ltd. (HACTL) say their clients needn't worry. HACTL is beefing up site security at its SuperTerminal 1 facility with the introduction of robot patrols.

The first security robot entered service in July and will initially patrol car and truck parking areas as well as export-goods handling areas, mainly during the peak nighttime period.

The robot is outfitted with a thermal imaging camera, a high-resolution camera with a wiper for outdoor use, a LiDar (light detection and ranging) technology sensor for navigation, and multiple ultrasonic sensors for collision avoidance. In addition to stepping up security, the robot will monitor the condition of cargo throughout the company's sprawling site, recording any incidents of damage to provide video evidence in the event of claims investigations.

If the robot had arms, it would have its hands full, given the scope of its job responsibilities: HACTL's multilevel SuperTerminal 1 occupies 4.2 million square feet of floor space, features a container storage system with 3,500 positions, and includes 313 truck docks. That space is already protected by 1,000 closed-circuit cameras and a card-controlled access system, but leaders say the robot will take security up a notch. □





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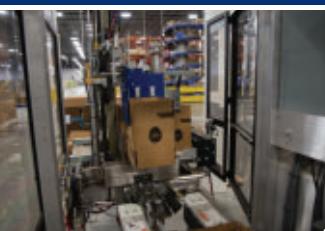
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## Logistics gives back

Here's our monthly roundup of some of the charitable works and donations by companies in the material handling and logistics space.

- More than 350 **Dematic** employees have contributed 1,500 hours of community service so far this year as part of the intralogistics company's community outreach program. Employees took part in volunteer events—including ones organized by Habitat for Humanity and Feed My Starving Children—in Grand Rapids, Michigan; Salt Lake City; Atlanta; and Milwaukee, Wisconsin.

- **Toshiba America Business Solutions**, a maker of printing and copying solutions, celebrated Earth Day in April by reforesting thousands of trees in ecologically sensitive areas worldwide. Since partnering with sustainability platform PrintReleaf in 2016, Toshiba has been responsible for replanting 151,652 trees throughout the U.S., Madagascar, the Dominican Republic, Mexico, Ireland, Canada, France, Brazil, and India.

- In June, reusable packaging manufacturer **Orbis Corp.** hosted its third annual "Good Days for Kids" golf outing. The event raised more than \$330,000 for the Children's Wisconsin Pediatric Simulation and Resuscitation Program, the region's only independent health-care system dedicated to the health and well-being of children.

- LEARN Science & Math Club, a nonprofit based in Kansas City, Missouri, gave away more than 60 customized electric cars and assistive devices for kids with mobility limitations during its annual "Geeks for Kids Delivery Day" celebration. Supply chain management services provider **Wagner Logistics**, a long-time partner and sponsor of the nonprofit, used its specialized handling skills to transport and deliver the vehicles for the kids.

## E-tailers kick the plastics habit

Online shoppers may notice a change in the look of their packages in the coming months, as major e-tailers phase out their use of plastic mailers and other plastics in a bid to cut ocean plastic pollution. For instance, Walmart recently committed to phasing out use of plastic e-commerce mailers in the U.S., and both Walmart and Target have pledged to significantly reduce their use of virgin plastic by 2025.

Now comes word that the largest e-commerce player of them all intends to follow suit. In its latest annual sustainability report, Amazon reported a significant drop in its plastic use last year and said it will phase out plastic mailers, according to As You Sow, a Berkeley, California-based shareholder advocacy group. The group, which says it has been pushing Amazon to set plastic reduction targets for the past three years, said it was particularly gratified to see in the report that Amazon had reduced its use of single-use plastic to ship customer orders by 11.6% in 2022 compared to 2021 levels.



As You Sow says it has filed multiple shareholder proposals with the company since 2021 asking it to reduce plastic packaging use in alignment with targets laid out in *Breaking the Plastic Wave*, a landmark study by Pew Charitable Trusts. That study concluded that plastic demand should be reduced by at least one-third to cut ocean plastic pollution 80% by 2040.

"Cutting plastic use by 11% and phasing out plastic mailers represent significant achievements by Amazon toward meeting reduction goals set out in the Pew report that will lead to less plastic waste," Conrad MacKerron, senior vice president of As You Sow, said in a release. "We are pleased the company has heard the strong voice of shareholders on this issue and responded. We hope the company will commit to a defined set of future reduction goals as well." □

## Sailing the ocean green?

It turns out there's more to cutting your car's carbon footprint than just choosing an electric or hybrid/electric model or limiting trips. For instance, you can also reduce your vehicle's environmental impact by limiting upstream supply chain inputs such as the pollution generated by importing automotive spare parts.

Global logistics service provider DB Schenker recently launched a program that will help consumers do just that. It is now shipping automotive spare parts on vessels powered by a biofuel called UCOME (used cooking oil methyl ester).

The German company has already partnered with Volvo Cars to ship 12,000 standard containers (TEUs) of automotive parts on the biofuel-powered vessels, a practice that's expected to reduce CO<sub>2</sub> emissions by 84% per container. This will save roughly 9,000 tons of CO<sub>2</sub> compared to ocean freight vessels powered by fossil fuel, Schenker says. The program started in June and connects Volvo Cars' Gothenburg, Sweden, production plant with the U.S. ports of Savannah, Newark, and New York. □



**When you want to  
move from having  
a supply chain to  
having visibility into  
your supply chain.**

**INSIDE****18 A love letter to the supply chain: interview with Yossi Sheffi**

BY DIANE RAND

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BY GARY FRANTZ

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**28 Making way for the wireless warehouse**

BY VICTORIA KICKHAM

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**34 Taming inventory with high-tech tools**

BY VICTORIA KICKHAM

Advanced software solutions that incorporate artificial intelligence, digital twins, and more are helping companies get a better handle on inventory management.

**38 How Lixil transformed its global supply chain operations**

BY NIK BAFANA AND FILIP BERNAERTS

No company has been immune to the supply chain disruptions that have rocked the business world over the past two and a half years. This is the story of how one company—water and housing product manufacturer Lixil—responded to this upheaval by transforming its supply chain to be more agile and efficient while still maintaining its focus on the customer and sustainability.

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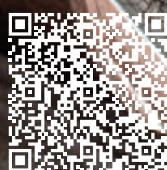


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## A new way to fly

ANYONE WHO HAS TAKEN TO THE SKIES THIS SUMMER knows that those skies have not been very friendly. Just before the July 4th holiday, a near-record number of travelers found their flights delayed or canceled altogether. Many faced multiple flight disruptions. Weather was to blame for some of the delays, but others were caused by problems with air traffic control in the busy travel corridors in the Northeast.

When passenger flights are delayed or canceled, belly cargo in the planes is also delayed. All-cargo flights are subject to disruptions as well. When scheduling problems develop, they may face difficulty finding the takeoff slots they need to meet delivery obligations.

But there is hope on the way with new technology designed to better manage the crowded skies. This past June, the Federal Aviation Administration (FAA) teamed up with its counterparts in Japan, Singapore, and Thailand to conduct a test demonstration utilizing Trajectory Based Operations, or TBO.

The TBO system is designed to expedite the movement of aircraft for better traffic control. It relies on the use, sharing, and management of an aircraft's trajectory to guide the aircraft along an optimal flight path under changing conditions.

The FAA says that air traffic controllers in the future will shift from sharing information via the current voice-based system to one centered on data exchange. This will allow each country to be immediately aware of how changes in other countries will affect a flight and better plan for when an aircraft enters its area of responsibility.

The June test involved an aircraft conducting four flight segments over six days, routing on June 11 from Seattle to Tokyo, then Tokyo to Singapore, Singapore to Bangkok, and finally from Bangkok back to Seattle on June 16. The participating countries shared data on the aircraft's trajectory, and then air experts sequenced the routes to achieve the optimal flight paths. The FAA reports that controllers factored in conditions such as weather, air traffic, and airspace closures. The successful tests marked the first joint effort to manage flights across multiple countries by predicting where an aircraft will be at what time.

The FAA says that with greater predictability and flexibility, aircraft may be able to reduce the amount of fuel they carry to cover contingencies, resulting in less fuel burn and lower emissions. Better coordination among the various nations will also decrease uncertainty in air traffic control systems and increase reliability.

The FAA and its international partners plan future tests to fully define the capabilities of the TBO technologies. This successful cooperation will hopefully lead to a future marked by more peaceful transit for both passengers and cargo.



*David Maloney*  
Group Editorial Director



## Survey: Supply chain professionals wary of rising operating costs

NEARLY THREE-QUARTERS (72%) OF SUPPLY CHAIN PROFESSIONALS are experiencing significant challenges across their organizations, from fuel costs to inflation to various delays outside their control, according to a report from last-mile delivery software company DispatchTrack.

Those issues are expected to continue over the next six months, DispatchTrack said in its "Supply Chain Perspective Report." The research is based on a survey completed in May of over 100 logistics professionals working in a variety of sectors, including furniture and appliances, third-party logistics, medical, and auto parts.

The top challenges supply chain leaders are currently experiencing include high fuel costs (59%), inflation (46%), delays outside of their control (41%), unpredictability (38%), driver shortages (32%), and losing business due to the economy (30%). The survey also showed that supply chain leaders expect ongoing increases in operating costs, with six in 10 respondents saying they believe operating costs will be 10% to 20% higher this year than in past years.

But despite those challenges and uncertainties, the majority of supply chain leaders are optimistic about the future, with 61% reporting a positive business outlook for 2023. In the coming year, over half of supply chain organizations plan to accelerate technology adoption (57%) as well as hire more drivers and increase delivery capacity (55%).

"The current economy is definitely having an impact on businesses and creating a wide range of supply chain challenges. That's why it has never been more important for businesses to deliver an excellent customer experience and preserve customer loyalty. Compromising service just isn't worth it," Satish Natarajan, DispatchTrack's co-founder and CEO, said in a release. "Investing in the right systems and technology is absolutely key to being more cost-efficient while staying customer-centric. Ultimately, that's key to weathering supply chain challenges." □

### "China plus one" sourcing trend is steering containers to Georgia, Port of Savannah says

The Port of Savannah says shifting supply chain and demographic trends are steering a growing share of the nation's global container trade to Georgia's shores. Trends in U.S. demographics and manufacturing as well as changes in global sourcing will all boost port volumes, Georgia Ports Authority (GPA) Executive Director Griff Lynch said in June in remarks to the Georgia Foreign Trade Conference.

"The population of the U.S. Southeast is growing faster than any other region of the country, and manufacturers are flocking to the area's business-friendly states," Lynch said. "Overseas, production is shifting to locations such as India and Vietnam that favor delivery via Savannah."

The latter trend is gaining traction as companies seek to diversify their supplier bases to reduce their dependence on China, Lynch said. Shippers are increasingly adopting a "China Plus One" strategy, maintaining significant production capability in China while simultaneously adding secondary manufacturing locations in growing markets like Vietnam, Korea, Thailand, and India. As a result, imports flowing from China through the Port of Savannah have already slowed, dropping to 41% of the port's total imports in 2022 from 49% in 2018.

"The question is, who is going to be the big China Plus One winner?" Lynch asked. "In our view, India is well positioned to take on significant volumes." And cargo from India favors the Suez Canal to reach the U.S. quickly, benefiting the U.S. East Coast and Savannah, he said. □

## Walmart opens largest fulfillment center to date

Retail giant Walmart has picked Indiana as the site of the second of four planned “next-generation fulfillment centers” that will enable faster shipping and delivery by aligning people, technology, and machine learning, the company said.



The 2.2 million-square-foot fulfillment center is located in McCordsville, some 20 miles northeast of Indianapolis. Along with increasing fulfillment capacity for orders placed on Walmart.com, the facility will allow the Bentonville, Arkansas-based company to expand its third-party logistics services (3PL) operations. The new building will support Walmart’s end-to-end third-party fulfillment business, known as Walmart Fulfillment Services (WFS), and will provide space to fill Walmart Marketplace orders.

Walmart did not disclose exactly which logistics technologies it had installed in the new facility, but last year, it said that its next-generation fulfillment centers would run on automated equipment and robotic systems from Knapp, Symbotic, and Witron.

The site is Walmart’s largest fulfillment center to date and is designed to expand access to the retailer’s next- or two-day shipping program. Combined with the rest of Walmart’s fulfillment network, these next-generation fulfillment centers will enable the retailer to reach 95% of the U.S. population with the service, the company said in a release.

“The McCordsville grand opening marks a major milestone in our supply chain modernization journey,” Karisa Sprague, senior vice president, fulfillment network operations for Walmart U.S., said in the release. “With more customers shopping online, we’re leveraging state-of-the-art technology to increase speed of delivery all while creating tech-empowered career opportunities for our associates.”

According to Walmart, its next-generation facilities will offer more diverse career paths than traditional warehouses do. The company says it is currently hiring for a variety of positions, including tech-focused jobs, for the McCordsville site, which will eventually employ 1,000 associates. □

## ACCOLADES

**Lineage Logistics**, a temperature-controlled industrial REIT (real estate investment trust) and integrated solutions provider, has been recognized by the Port of Seattle with a Sustainable Century award for its environmental leadership and efforts to help the port achieve its environmental stewardship, sustainability, and equity goals. ... Warehouse robotics developer **Exotec** has selected **Hy-Tek Intralogistics** as the winner of its Global Integrator of the Year award for 2023. ... **Fleet Advantage**, a specialist in Class-8 fleet data analytics, equipment financing, and life-cycle cost management, has received the 2023 Purpose Award for Community Engagement from the Transportation Marketing and Sales Association (TMSA). ... Global logistics company **C.H. Robinson** has announced the winners of its annual Carrier of the Year awards. The program recognizes 23 carriers that stood out for exceptional service quality and reliability, operational excellence, and adoption of technology to enhance overall efficiency and performance. The list of winners can be found at [www.chrobinson.com](http://www.chrobinson.com).

## NEWSMAKERS

**XPO**, a provider of less-than-truckload (LTL) freight transportation service, recently welcomed **Dave Bates** as chief operating officer, North American LTL. Bates joins XPO after



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27 years with Old Dominion Freight Line Inc., where he most recently served as senior vice president, operations. ... **DDC FPO**, an outsourcing company that dedicates teams of professionals to serve as extensions of transportation and logistics companies, has promoted 16-year team member **Quetura Hudson** to director of client management.

... Third-party logistics service provider **RBW Logistics** has appointed **David Sadler** as its new chief financial officer. ... **Tompkins Ventures**, a management consultant and business matchmaking firm, has promoted current COO **Mike Royster** to chief executive officer. Royster brings three decades of experience managing logistics and distribution on a global basis to his new position. ... **Lineage Logistics**, a temperature-controlled industrial REIT (real estate investment trust) and logistics solutions provider, has named **Rob Crisci** chief financial officer.



SADLER

## Commerce Dept. funds \$20 million supply-chain resiliency push

By connecting small suppliers with wider industrial networks in a \$20 million initiative, the Biden administration hopes to make domestic supply chains more resilient and efficient, the federal government said.

The money comes in the form of roughly \$400,000 being sent to every state and Puerto Rico through the Hollings Manufacturing Extension Partnership (MEP), a program of the U.S. Department of Commerce's National Institute of Standards and Technology (NIST), the Commerce Department said on June 9.

The awards will support the creation of a national database called the Supply Chain Optimization and Intelligence Network (SCOIN) that will focus on providing supplier scouting services, establishing new service offerings to improve existing supply chain networks, filling gaps in the supply chain by connecting original equipment manufacturers (OEMs) with small and medium-sized manufacturers, and creating a complete map of U.S. supplier capability and capacity.

Funding is provided by the CHIPS and Science Act of 2022, which authorized a pilot program of awards that would allow MEP centers to provide services focused on resiliency of domestic supply chains, workforce development, and adoption of advanced technology upgrades at small and medium-sized manufacturers.

"For the first time, the U.S. government is creating a comprehensive end-to-end mapping of the supply chain, which is crucial for the domestic manufacturing industry and resiliency," Pravina Raghavan, NIST MEP director, said in a release. "Supply chain shortages are due to a lack of supply chain capacity. To address this issue, we're creating an information system that lays out all the suppliers across various industries. This way, we can connect small suppliers to more opportunities in the supply chain." □

## GROUND BREAKERS

Retail chain **Ace Hardware Corp.** will open a new retail support center (RSC) in Kansas City, Missouri. The facility, which will occupy approximately 1.5 million square feet of space, is projected to be fully operational in 2025. ... Omnichannel supply chain services provider **Saddle Creek Logistics Services** is expanding existing warehousing and fulfillment operations in four key markets to support the needs of new and prospective clients. The company is opening additional multiclient distribution centers in Kentucky, Illinois, Pennsylvania, and Nevada, adding more than 1.8 million square feet of space in the next year. ... Third-party logistics company **Cold-Link Logistics** is scheduled to break ground on a new 200,000-square-foot cold storage warehouse and transportation hub. The \$64 million project will be located on a 65-acre site near Ellisville, Mississippi.

## European Union directive will require corporate carbon accounting

As a deadline nears for large companies doing business in the European Union (EU) to report their greenhouse gas emissions, an increasing number of technology vendors are launching carbon-tracking tools.

The regulation known as the "Corporate Sustainability Reporting Directive" (CSRD) will take effect in June 2024, requiring some 50,000 companies doing business within the EU to report annually on their past and present greenhouse gas emissions. The directive is an expansion of an existing rule called the Non-Financial Reporting Directive (NFRD), which affects some 11,000 companies.

Those affected by the new requirements will be EU-based companies that meet two of three conditions: \$44 million in revenue, \$22 million in assets, or 250 or more employees. In addition, non-EU companies that earn revenues of over \$166 million in the EU will have to comply, according to Normative.io, a Swedish company that provides carbon accounting software.

Whether they're affected by CSRD or are simply trying to meet internal environmental, social, and governance (ESG) goals, many companies struggle with clear, accurate environmental reporting. So providers are starting to offer tools that track the environmental impact of logistics. For example, in June, parcel giant FedEx Corp. launched a tool that tracks emissions for each package moving through its network. And in April, supply chain visibility provider FourKites introduced its "Sustainability Hub," which allows users to track, analyze, and report on the environmental impact of their supply chain logistics operations. Last year, Shippeo, which operates a multimodal shipment visibility platform, unveiled a CO<sub>2</sub> emissions calculator that allows shippers, logistics service providers, and carriers to measure carbon emissions generated by transportation and distribution activities.

Now nShift, a British developer of parcel delivery management and shipment software, has launched a similar product called Emissions Tracker. nShift says its new solution helps e-commerce companies and warehouses calculate, record, and analyze greenhouse gas emissions for every shipment, so they can comply with environmental reporting requirements or pinpoint opportunities for emissions reduction. □

## JD.com opens vast “intelligent logistics park”

On June 14, just days before its mid-June “618” shopping promotional event, Chinese e-commerce giant JD.com announced that its JD Logistics division had launched Phase 2 of its “Kunshan Asia No.1 Intelligent Logistics Park,” a vast automated package sorting facility in Jiangsu province, China.

“With a floor area of over 500,000 square meters (5.4 million square feet), when combined with the existing Phase 1, JD’s Kunshan Asia No.1 Intelligent Logistics Park now stands as the world’s largest intelligent logistics park,” the company said in a statement. The facility boasts cutting-edge integrated warehousing and sorting capabilities and is capable of sorting 4.5 million parcels per day, it also said.

The facility features more than 80 sorting lines and a fleet of 10,000 intelligent sorting robots. Running around the clock during peak periods, like JD’s 618 promotion, the system boasts a sorting accuracy rate of 99.99% and provides a five-fold increase in efficiency compared to traditional methods, the company said.

With the launch of Phase 2 of the Logistics Park, JD’s logistics network now ensures that over 93% of JD’s retail orders from the East China region can be delivered the same day or next day, covering a population of 200 million people.



### GO FIGURE ...

# 3%

The week-over-week jump in trucking visits to top-50 retailers during the final week leading into July 4th, representing one of the first positive signs of recovery since the current freight recession began.

SOURCE: MOTIVE MONTHLY ECONOMIC REPORT – JULY 2023

Complemented by JD’s network of over 1,500 warehouses, the company now guarantees that it will make good on the “211” promise: orders placed before 11 a.m. will be delivered the same day, while orders placed before 11 p.m.

will arrive the following day, to almost every corner of China.

Much of that fulfillment muscle is being leveraged for the benefit of external clients, as opposed to JD.com’s own e-commerce operations. During the first quarter of this year, JD Logistics posted a 59.8% year-over-year increase in revenue from external clients, who now account for 70%

of its total revenue. The industries using JD Logistics’ network include the electronics, industrial, apparel, medicine, and automobile sectors.

JD Logistics has also replicated elements of its logistics operation in the U.S. In February, it opened a “self-operating warehouse” in California, its fifth facility in the United States. □

## ALLIANCES

Less-than-truckload (LTL) carrier **U.S. Special Delivery** has chosen **Carrier Logistics Inc.**’s “FACTS” transportation management system to manage its freight operations. ... Global health technology company **Actegy** has gone live with **ReverseLogix**’s returns management system at its U.S. and U.K. locations. ... Real-time supply chain visibility specialist **FourKites** has joined forces with Germany-based **Spotos** to bring real-time supply chain visibility to European shippers. Spotos offers a digital freight forwarding platform that gives shippers access to a wide network of carriers across Europe. The partnership will give Spotos’ customers up-to-the-minute predictive estimated times of arrival (ETAs) and real-time status updates for their shipments anywhere in Europe, according to the partners. ... **ResGreen Group**

**International Inc.**, a mobile robot and software solutions company, has partnered with wearable tech developer **ProGlove** to increase collaboration between workers and automated equipment. ProGlove provides wearable barcode scanners that can be easily integrated with ResGreen’s BotWay software and LilBuddy autonomous mobile robots (AMRs). ... German intralogistics company **Jungheinrich** and **Mitsubishi Logisnext Americas**, a North American provider and manufacturer of material handling, automation, and fleet solutions, have announced plans to launch **Rocrich AGV Solutions**. The joint venture will build on their existing partnership and will offer mobile automation solutions for warehouses and production facilities in North America.

## MiR marks 10th anniversary as AMR market matures

The autonomous mobile robot (AMR) developer Mobile Industrial Robots (MiR) is celebrating its 10th anniversary as both the Danish startup and the industry it helped found begin the transition from fledgling industry to established market.

Less than a decade ago, the idea of fully autonomous mobile robots interacting seamlessly with human employees in warehouses and production facilities seemed a futuristic vision, according to MiR, which is now owned by Teradyne Inc. But today, thousands of AMRs from MiR alone deliver parts, transport finished products, and handle multiple other logistics tasks without the need for human operators, separate work areas, or external guidance. And analysts are forecasting double-digit growth for AMR sales every year through at least 2027 and a period of multidecade growth.



Not many robot makers are more than 10 years old, with the exception of Vecna (founded in 1998) and Seegrid (2003), which originally focused on related automation platforms like automated guided vehicles (AGVs). And it was just 11 years ago, in 2012, that Amazon acquired industry pioneer Kiva Systems. But a flock of others will soon reach the decade mark, including Fetch Robotics (founded in 2014 and now owned by Zebra), Locus Robotics (2014), Geek+ (2015), 6 River Systems (founded in 2015 and now owned by Ocado), and ForwardX (2016).

As AMRs look to expand their market share in DCs around the world, software will be a crucial ingredient, MiR President Jean-Pierre Hathout said in a release. "As robot fleets grow, so does the demand for software tools to optimize performance and manage full fleets," he said. "If we want AMRs to be as common as forklifts and pallet lifters, it is essential that we lower the barriers [to] implementation, reprogramming, and maintenance." □

### SHORT TAKES

**Vertical Cold Storage**, a developer and operator of temperature-controlled DCs, has purchased MWCold, an operator of two temperature-controlled warehouse facilities in Central Indiana. ... Mobile and business automation software developer **Transflo** has merged with **Assured Telematics Inc.**, a provider of fleet management solutions. ... Less-than-truckload carrier **Roadrunner** has added eight new lanes to its network. The new lanes provide inbound service to Richmond, Newport News, and Virginia Beach, Virginia, from origination points in California, as well as direct service to Las Vegas from Chicago, Cleveland, Detroit, Milwaukee, and Philadelphia. ... Global logistics specialist **Geodis** has acquired Southern Companies, a U.S.-based drayage provider that handles all phases of the import and export process.

## Nearshoring trend sparks demand for logistics real estate in Mexico

Demand for Mexican logistics real estate is heating up as North American companies move their production closer to U.S. end consumers in a bid to reduce their exposure to global market volatility—a practice known as “nearshoring,” according to a report from the real estate developer Prologis. In a paper titled “Impacts of Nearshoring on Demand for Mexican Logistics Real Estate,” Prologis researchers noted that location, free trade, and inexpensive labor have made Mexico an attractive candidate for nearshoring.

By the numbers, demand for industrial space in Mexico doubled in 2022 from 2019 levels, sending vacancy rates plummeting to approximately 1% and pushing up rents by 16% in 2022. The numbers reflect conditions in Mexico's six main markets: Mexico City, Monterrey, Ciudad Juárez, Guadalajara, Reynosa, and Tijuana. Mexican logistics sector rents are poised to spike again in 2023, the report said.

And this is just the first wave of investment. Prologis expects the movement to play out over the coming decades as local economies in Mexico build a critical mass of infrastructure, expertise, and suppliers. That expansion will also help Mexico capture business in new sectors, expanding from its traditional stronghold in auto manufacturing into the electronics sector, the report said.

The Prologis report's findings echoed research results from supply chain visibility provider FourKites, which recently found that U.S. companies have driven a 20% rise in shipment volumes from Mexico to the U.S. over two years. Another market indicator, the U.S. Bank Freight Payment Index, showed that truck freight volume contracted nationwide during the first quarter in all U.S. regions except for the Southwest, where nearshoring has driven a steep rise in the flow of goods from Mexico. □

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# A love letter to the supply chain



In MIT Professor Yossi Sheffi's newest book, readers journey through the evolution of supply chain management while gaining a glimpse into its future.

## INTERVIEW WITH YOSSI SHEFFI

THE PANDEMIC SERVED TO MAKE SUPPLY CHAIN MANAGEMENT a household name. Consumers were suddenly aware of what a supply chain could do and what it could *not* do during a time of global disruption. For MIT (Massachusetts Institute of Technology) Professor Yossi Sheffi, this felt like a perfect opportunity to educate the masses on a field he's been studying for decades.

In Sheffi's newest book, *The Magic Conveyor Belt: Supply Chains, A.I., and the Future of Work*, he explains "what supply chains are, how they operate, and how the integration of advanced technology with people and processes will be the hallmark of future supply chain management."

Sheffi has long been on the cutting edge of supply chain trends. In 1987, for example, long before the boom in logistics software, Sheffi co-founded Princeton Transportation Consulting Group, which developed decision-support systems for the motor carrier industry. He went on to found three other technology companies before 2000, the last being Logistics.com, an online resource for logistics software, services, and information that was acquired by Manhattan Associates in 2003. Sheffi also co-founded one of the first nonasset-based third-party logistics service companies in the United States in 1988.

His research interests, however, have not been confined to supply chain technology. In books like *The Resilient Enterprise*, *Logistics Clusters*, *The Power of Resilience*, and *Balancing Green: When to Embrace Sustainability in a Business (and When Not To)*, he has explored topics such as supply chain resiliency, industrial clusters (in the context of logistics and supply chain management), and sustainability as well as technology and digital transformation. In all of these endeavors, Sheffi has striven to make his work accessible to the general business audience.

Now, with his newest book, he seems to be taking a moment to step back and marvel once again at how complex yet efficient the modern supply chain is (and then share that appreciation with the reader).

When Sheffi is not busy writing books and teaching classes at the Massachusetts Institute of Technology, he serves as director of the university's Center for Transportation and Logistics. He is also a sought-after speaker at supply chain industry events. This fall, Sheffi will be a keynote speaker at the Council of Supply Chain Management Professionals' (CSCMP) Edge Conference in Kissimmee, Florida.

He recently spoke with Diane Rand about his new book and why technology will be the key to the future of supply chains.

**Q** Can you explain the title of your new book? What exactly is “the magic conveyor belt”?

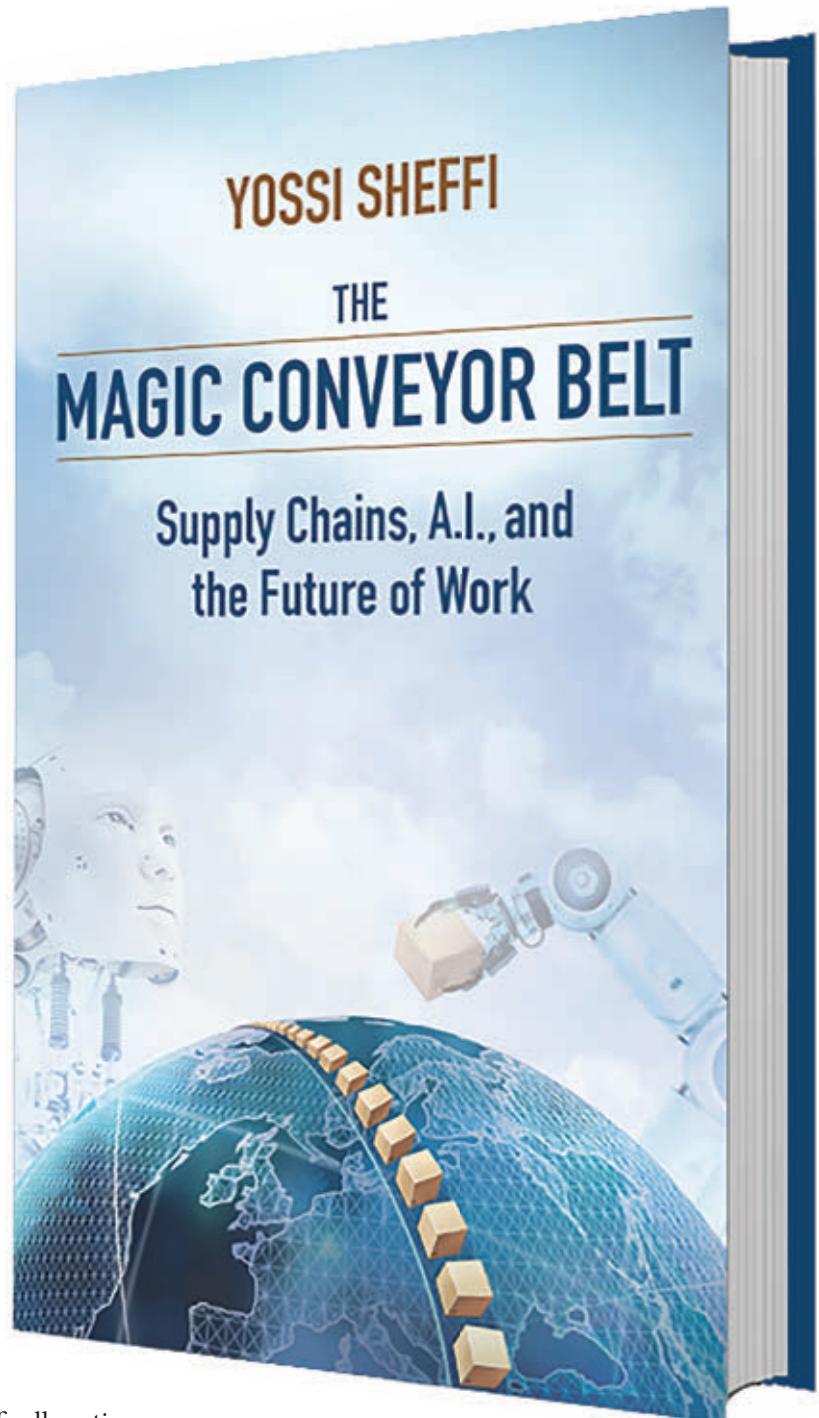
**A** The idea for the book came to me during the pandemic, when people started learning more about supply chain management. All of a sudden, everybody I met would ask, “You work in supply chain? How long have you worked in the industry?” I would tell them, “For about 40-plus years!”

I would go on to explain to someone who doesn’t understand what’s going on [within a supply chain] that [a supply chain] seems like magic. Because the idea that somebody can collect material somewhere in the bowels of China and go to multiple suppliers, build the product, and send it over the seven seas through different regulatory and customs regimes is magical. In fact, I tell people that if they really understood what’s going on [in supply chains] and how complex the process is, they would never be disappointed when they don’t find something on the shelf or if Amazon doesn’t have an item in stock. Instead, they would be amazed when the product they want to buy *is* there on the shelf.

Once you understand what it takes to develop a product, procure the material, and do all the planning that happens even before a product is made, [you realize that] it’s a big, complex network. So that’s why we titled the book “The Magic Conveyor Belt.” The conveyor brings product from anywhere to everywhere magically.

**Q** Your book has four main sections, but let’s talk about the chapter on technology, specifically artificial intelligence (AI). Why do you believe that AI will play a crucial role in the future of supply chain management?

**A** First of all, I believe that AI is going to change society and change business, which includes supply chain management. I think generative AI, like ChatGPT, will play a crucial role in the future. While it is very hard to predict exactly how this technology will influence and change supply chains, I believe it can be a transformative technology



like the internet. When the internet started, who could have predicted that we would have Google Maps or an endless number of apps to do everything?

What I do know is that there are always side consequences when technology is applied and adopted within supply chains. In the second part of my book, I give a historical overview of what happened in various industrial revolu-

tions. When Ford started the assembly line to build cars, the number of workers at Ford went from a few hundred to about 150,000 during the height of Model T production. People are often afraid that technology will take over jobs. But in fact, more jobs were created. Beyond the Ford assembly line, people now had cars and started traveling more, which led to the opening of motels and restaurants along highways to accommodate travelers. The whole hospitality industry flourished with millions of new jobs.

I have a quote in the book from the CEO of jd.com, who said a few years

back, "I have 80,000 people working in warehouses; I'd like to cut it by half." Well, five years later, he has three times as many people, because when technology gets more efficient, people do more of it. It's the basic supply and demand model that drives supply chains and technological advances.

But technology can also bring about societal changes. Let's look at what might happen when a technology like 3D printing comes to the forefront of our supply chains, for example. I don't think we'll start printing new toasters at home, but we'll be able to print some products locally.

If we're able to 3D-print products in the back of a Walmart or UPS store, this will have vast implications for our supply chains. First, we'll have to bring raw material to the locations, but stores will no longer need to display thousands of products because we'll be able to make them on demand. Having this capability requires a totally different mindset. This is just one example of how AI can impact the future of our supply chains and why I feel it is such a foundational technology.

**Q** What are some problems that you feel AI will help supply chain managers solve in the future?

**A** We are starting to compile a lot more data. With more sensors embedded in moving trucks and in packaging, the availability of that data will continue to grow. The more accurate the data is, and the more of it we have, the main contribution [of AI] will be the analysis of this data—being able to look at the cause [of what's happening]. One of the things that the new AI can do is not only analyze numbers, but also look across the internet at demand patterns, based on text, videos, or weather patterns, and connect a lot of these dots and come up with forecasts.

Let's say there are reports of congestion at the Mexican border today. A truck carrying product XYZ is now going to be eight hours late. We made this delay estimate based on the road congestion and by collecting a lot of data. AI can estimate how long the delay will last. It will give us better visibility and provide better fore-



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casts as more data is collected over time.

**Q** In the midst of the explosion of automation and AI in the supply chain setting, what role do humans continue to play?

**A** We need people to oversee the automation and AI, to make sure what it's doing is making sense. For example, right now, a lot of nonsense is being generated by ChatGPT. Even as the AI evolves, I believe it will be important to continue to have supervision over generative AI. In fact, one of the important jobs in the new economy will be to monitor automated, AI-infused systems. This is a tough and boring job, and companies will need to develop the means to keep the monitors alert and able to intervene when needed.

There's another issue that's also very important: The more we're digitizing the world, the more we are subjected to cyberattacks. We need to know how to do things manually just in case the technology is compromised. For example, more robots and machines are helping doctors in the operating room. But if all of a sudden a robot quit working, you'd need a doctor to step in and finish the surgery. We will always need humans, no matter how advanced the technology becomes.

And continuing with the medical example—an AI system can help detect cancer at an early stage. No machine, however, can replace the doctor and nurse who bring the message to the patient with compassion and nuance, and then go through the treatment options.

**Q** You say in the book that there are six areas where humans surpass computers. What are those areas?

**A** Since people live in the physical and social worlds, they have a much better ability to detect changes or discrepancies between what's normal and what's an abnormal situation. The second area is that people have a moral code, which machines don't necessarily have. The third is that people are much better at adapting to changes in situations and coordinating processes when disruptions occur.

The fourth area, I would say, is creative drive. Take the fashion industry, which seeks out novelty—new material, new design services. People are better than AI at seeking competitive advantage. The fifth area is that people have empathy—a machine cannot replace the smile of the cashier in the local supermarket. And the last area where people surpass AI is assessing risk tolerance. Computers can generate actionable steps based on probability of risk, but they can't factor in those social and moral considerations that can impact my decision to take a high-risk/high-reward option or a safer option.

**Q** What are some ways that companies might someday be able to integrate humans and technology to improve how they manage their supply chains?

**A** You see this already happening today. If you think about Amazon warehouses, their robots do the same thing that

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Ford did 100 years ago. In Ford's assembly line, instead of people going to the car, they brought the car to the people. The assembly line was moving, and the people were static. It's the same thing that has happened with the Amazon robots. Instead of somebody going in and collecting stuff around the warehouse, the workers are stationary. Today, however, the Amazon robots are much more complex than the Ford assembly line. They are all fueled by AI, and that's how they avoid running into each other.

As technology continues to advance, we'll have to teach people how to do some work differently. By and large, there'll be a lot of instances where AI and other technology will automate some of the tasks that are part of the job, rather than entirely replace the work.

Take ChatGPT, for example.

I'm sure writers are worried about the future of their jobs. Yet I'm of the opinion that rather than worry about the technology, we just have to teach people how to use it best. I started experimenting with ChatGPT, prompting it when I want to write something. And it writes a starter idea. Sometimes it's stupid, and I just ignore it. But sometimes, it gives me something to start with. I can change it and add to it, which makes it much easier than starting with a blank page. ChatGPT, to me, is augmenting my work. It makes it easier to write a short email, a blog, whatever, and I'm becoming more efficient with this technology the more I use it.

My students always ask me how they can keep up to date [on new technologies], and I always tell them to "never stop learning." Take online courses, go to confer-

ences, read journals, always keep learning because otherwise, you will be passed over.

**Q** What skills will supply chain managers need in order to work effectively in this new environment?

**A** The most important thing is to acquire critical thinking skills and to keep an open mind. It's critical to make sure you are exposed to many different viewpoints so you can debate ideas and learn how to solve difficult problems with empathy and understanding. In supply chain management, you have to be able to sell, debate with people, relate to others, and make connections with your contemporaries.

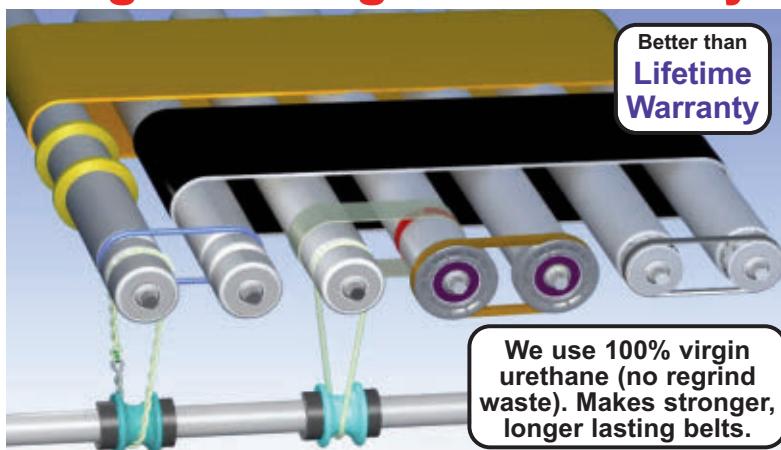
Specifically, I tell my students to get comfortable with being uncomfortable. You may feel uncomfortable when somebody expresses an opinion or a point of view that you don't agree with. Don't get insulted. Think to yourself, maybe they know something that I don't, and question why they have this point of view. Learning how to talk about our differences in a civilized and respectful way will get you far in all areas of life. In the next few years, more people are going to be more anxious, so the ability to relate will be at a premium.

**Q** How are you and MIT preparing your students for this new reality?

**A** Our program has changed direction dramatically over the last 25 years. When we started, it was focused heavily on mathematics. Yes, we still teach new technologies and mathematics and computers, but now we invest more time in teaching our students communication skills—being able to express yourself in writing, giving more attention to what you might call "soft skills."

I still remember about 15 years ago, a senior executive told me, "Your students are very, very smart. But they'll end up graduating MIT and working for a Harvard graduate who's half as smart and gets paid twice as much." He advised me to put more emphasis on soft skills because that's how students will learn how to work better in teams. I think his advice is still valid today. □

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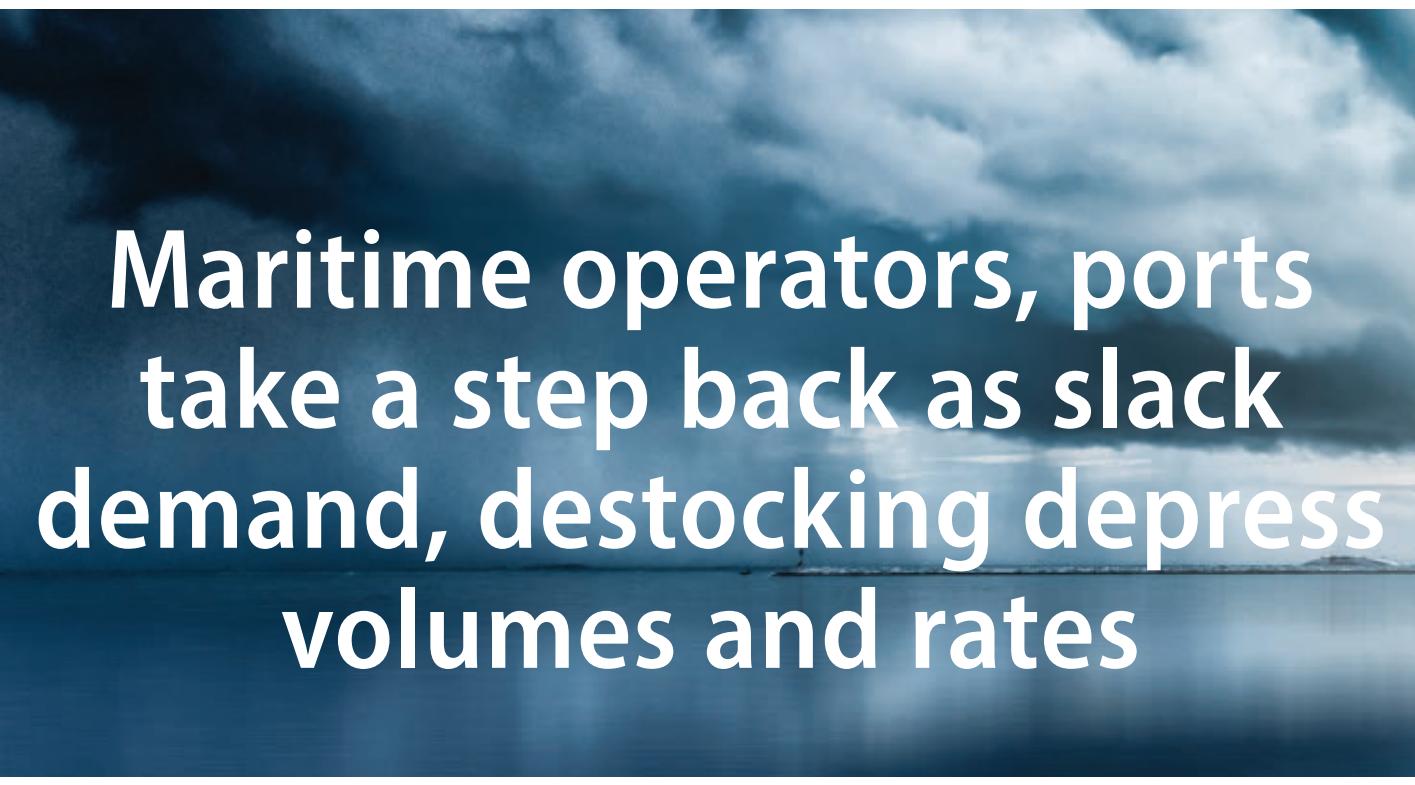
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# Maritime operators, ports take a step back as slack demand, destocking depress volumes and rates

The maritime industry breathed a sigh of relief as West Coast ports inked a labor agreement. The next challenges: the effects of climate change, a tepid global economy, new environmental regs, and a looming capacity glut.

IT'S BEEN AN INTERESTING SUMMER FOR PORT and maritime operators. A potential strike among West Coast longshore workers appears to have been averted as management and labor hammered out an 11th hour agreement, which now goes to members for ratification. Drought conditions impacting water levels—and ship passages—through the Panama Canal have moderated, fore-stalling potential delays and more serious restrictions. And while loose capacity, slack demand, and weak shipping volumes have forced ocean containership operators to park some ships and slow-steam others, some industry watchers believe the market has bottomed out and is primed for a rebound.

"We believe that the container shipping downturn bottomed out in February," says Bryan Brandes, the Port of Oakland's maritime director. "Oakland cargo volumes have been on a steady increase for three consecutive months since February."

At the Port of Long Beach, "the trajectory has been very good," observes Executive Director Mario Cordero. "Volumes for the month of May, at 158,000 TEUs [20-foot equivalent units], were the highest since August 2022" and

represented a 15% increase over April 2023. "We expect by the end of the year for the San Pedro Bay complex to have [more] TEU volume than any other gateway," Cordero says, adding that the Long Beach/Los Angeles port complex is the nation's largest container gateway.

The Port of Virginia sees "ocean freight moving in the direction of returning to normal," says port spokesman Joe Harris, who noted that the Covid-driven surges were an anomaly and that "going forward, volumes are going to be impacted by more traditional factors like inflation, consumer trends, changes in supply chain [sourcing], geopolitical events, and the like."

The Port Authority of New York & New Jersey was the second-busiest containerport year-to-date, handling nearly 1.6 million TEUs since the first of the year. The seaport moved 676,311 TEUs in May 2023, 5.1% more cargo than in pre-pandemic May 2019. "Things have been soft and below where we would certainly like them to be," says Beth Rooney, director of the port department for the New York/New Jersey Port Authority. "That being said, we are trending higher than [in the same period in] 2019. We're in pretty good shape."



## TWO SCENARIOS

Lars Jensen, CEO and partner with consulting firm Vespucci Maritime, sees two possible scenarios for the maritime industry going forward. “One is where the market gets worse—which, from a headline perspective, is the easiest argument to make. Why? We still have a lot of extra capacity in the market, rates have been trending downward, and blank [canceled] sailings have been increasing,” he notes. On top of that is the persistent issue of “a continued overhang of inventory that is not being cleared fast enough and that is depressing volumes.”

Yet it’s not a “slam dunk” that a continued downturn is in the market’s future, opines Jensen, who also says “there is actually a legitimate argument that the market is going in the exact opposite direction. History tells us that markets driven by inventory correction, once that is done, typically rebound a lot faster than anyone expects.”

“If the doomsayers of a recession are wrong, then you could see the market snap back very quickly, and we could see a strong peak season,” he continues. “We will eventually hit bottom [if we haven’t already], and once that happens, we will see a rebound, one that could happen quickly to drive demand.”

Beth Rooney makes a similar point about an inventory overhang. “What we have been doing for the last six to nine months is living off the bloated inventory that [has] accumulated. There was so much panic buying during the

pandemic on the part of shippers who were afraid of running out of inventory. They bought early and often. We have been living off that excess inventory.”

That reality was reinforced in a meeting Rooney and her team had in June with the largest sporting goods retailer in the U.S. “They were very open that they were living off [bloated] inventory; they bought too much, too soon,” she says.

A common refrain among retailers she’s talked with is that they were faced with the conundrum of liquidating goods that missed their seasonal window, went out of style, or became obsolete. Until they did so, “there was no room at the inn .... Warehouses were full, and they couldn’t bring in the summer outdoor furniture because they were still liquidating snow blowers,” she notes.

## LESS DWELL, MORE DIVERSION

One issue that thankfully has no longer been a problem for Rooney as well as her fellow port operators is excessive dwell, or delay in containers moving out of the port. Last year, the New York/New Jersey Port Authority, in cooperation with drayage firms, liner operators, and terminal operators, instituted an empty-container evacuation program to address extended dwell issues.

“It’s gone very well; we didn’t have to charge any of the assessments if carriers did not follow through,” she says. “That helped restore fluidity and got the truckers the

opportunity to return the empties that were in the yard, holding up chassis and preventing the next import from coming in."

The improvement was dramatic. "In dwell alone, at our worst we were upwards of 21 days average dwell time," Rooney notes. "Last week, our average dwell was 3.36 days."

There also continues to be some diversion of cargo from West Coast destinations to Gulf and East Coast ports. Some of that is an outgrowth of pandemic-induced congestion that initially created problems at West Coast ports, exacerbated over the past nine months by shipper angst over labor negotiations. "We continue to gain market share on West Coast ports," says Rooney. Shippers are telling her that until the West Coast labor contract is fully ratified, "they are not racing to go back."

Nevertheless, Long Beach's Cordero points out that while the American shipper has choices for Asia-U.S. cargo movement, "the San Pedro Bay complex remains the No. 1 gateway" for U.S. shippers, and he expects them to eventually make routing changes that will return more cargo to the West Coast. "It will remain competitive," he says, citing the port's "billions in capital improvement programs" as a major incentive for shippers and vessel operators, particularly Long Beach's investments in on-dock rail, efficiency, and cargo velocity.

#### RECORD PROFITS NO MORE

Ship operators are coming off two years of record profits. As they head into the remainder of 2023 and on into 2024, they are instituting cost-saving moves like slow steaming, resulting in longer transit times and blanked sailings, while idling some capacity and sending other older vessels to the scrapyard. At the same time, they're preparing for a coming wave of new, larger vessels that will be brought online over the next few years, which will portend still more changes and challenges for operators and shippers alike.

"New vessels are already being delivered," notes Vespucci Maritime's Jensen. With deliveries representing 10% of market capacity projected to come online this year and next year, "it's easy to make the case that we could again be in an overcapacity situation."

Jensen says ship operators are "slowing everything down," particularly in the Asia-Europe and European Community trade lanes. "That will absorb quite a bit of the new capacity; they are putting extra vessels on every string." Another factor impacting capacity is ship operators parking vessels, which he estimates is currently about 3% of the worldwide fleet.

Jensen also expects to see a ramp-up in the scrapping of older vessels, with this year and next year seeing some 70,000 TEUs of capacity exiting the market. High charter

rates last year, which kept many older vessels in service, have declined precipitously, accelerating their exit. And last but not least are coming environmental regulations, which will force out many older, noncompliant vessels and will require vessel operators to invest in new ships and push their fleets to run cleaner than ever before.

Stuart Sandlin, president of the North America region for global containership operator Hapag-Lloyd, agrees with others that "on the demand side, import markets have been weaker ... [largely] due to a global economic slowdown and unusually high inventories." However, he adds,

"we have recently seen demand start to rise slightly in some selected trades. I would anticipate that demand is likely to remain subdued until the destocking cycle is completed."

From a supply perspective, Sandlin notes that "a strong inflow of new capacity will be partially offset by an increase in scrapping activities and slow steaming. This will be exacerbated by the International Maritime Organization's CII regulation, which impacts less fuel-efficient ships. (CII stands for

"Carbon Intensity Indicator," which is a measure of how efficiently a ship transports goods or passengers.) Sandlin goes on to say, "I anticipate that supply will likely outpace demand in 2023 and 2024, making active cost management inevitable." A bright spot for liner operators: growth in the Asia-to-Mexico trade lane, supported by a rise in nearshoring of manufacturing and production capacity among many industries.

It is a similar story at Maersk, the world's largest containership fleet operator. The company continues to anticipate that the inventory correction will have run its course by mid-year, "leading to a more balanced demand environment" for the second half of the year, as the carrier noted in its Q1 earnings statement. That projection is beginning to come into focus as Maersk "has begun to see an uptick in cargo flows common to peak season shipping, as the flow of back-to-school, fall fashion, and end-of-the-year holiday goods begins to come into North America," noted a Maersk spokesperson.

One area Maersk (and other ship operators) is monitoring closely is the draft adjustments announced by the Panama Canal Authority. As of mid-June, "the authority communicated that a maximum draft of 44 feet is in effect for the Neopanamax locks," explained the Maersk spokesperson. (Neopanamax, or "new" Panamax, is a term that relates to the size of the containerships or other vessels that are able to transit the now-widened Panama Canal.) That reduction is a drop of six feet since restrictions were first announced in March. Low water levels prevent some larger ships from transiting the canal and force ship operators to divert cargo over other routes, such as the Suez Canal.



And while local weather conditions continue to affect the water levels the Panama Canal requires for operation, “in compliance with [current] draft restrictions, we are optimizing our network planning and vessel loading accordingly,” said the spokesperson. Maersk continues to offer multiple sailings per week through Panama.

#### THE SHIPPER'S PERSPECTIVE

Ocean freight “has not bottomed out. It’s a longer cycle going down and not as fast coming back up,” says Andy Dyer, president, transportation management for AFS Logistics. “There just isn’t enough freight out there. Everyone is hoping for a peak season, but no one is holding their breath.”

U.S.-based AFS operates as a freight forwarder and broker for ocean freight, dealing directly with ship lines on behalf of AFS customers to arrange and route freight. Dyer sees a market “fresh off the crack of the bullwhip effect from Covid,” a seminal market event that’s been longer in duration than anyone expected and whose impact “is still echoing in people’s ears.”

Does he expect a second-half pickup in ocean freight volumes? Maybe. “What really comes into play is material consumption,” he’s observed. “One saving grace is that the consumer has continued to buy, even as we have seen a lot of inflation. There was a big bubble in demand for goods, retailers over-inventoried, [and then] demand from consumers dropped as they switched spending to services. Just look at what’s happened with airline, hotel, and rental car prices.”

With a stable yet relatively tepid economy, Dyer does not expect demand for ocean freight to explode anytime soon. “We’ve been working off a mountain of inventory. And it’s not done yet,” he notes. One lesson he believes shippers have learned: the importance of de-risking and diversifying supply chains and sourcing nodes.

“People are looking at the nodes and flows in their supply chains and realizing they have to change, reduce risk, and improve reliability—as well as manage cost,” he says. “It’s not just the number of

suppliers; it’s where they are [and] having reliable secondary sources that can jump in when a primary is compromised.

“Let’s face it, if you were relying on China, as many have for years, just moving to another part of Asia may not always be the best answer,” he notes, adding that people are thinking more broadly.

“Making those types of changes, and then seeing those manifest themselves in freight from new locations, doesn’t happen overnight. Untangling and replacing some of those global relationships can be a years-long process.” □

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# Making way for the wireless warehouse



The adoption of wireless charging for AMRs and AGVs is on the rise—and if developers have their way, traditional forklifts are next.

DEMAND FOR WIRELESS charging is gaining steam in warehousing and logistics, largely because of the growing use of autonomous vehicles and equipment in those environments—and a resulting need to maximize uptime, minimize wear and tear, and do away with the work involved in stopping to manually charge a piece of equipment. It's all part of a continued effort to simplify and streamline daily operations, and experts say it may have industry-changing implications.

Wireless charging—also known as inductive charging—is a way to charge batteries in electric vehicles or equipment without plugging them directly into a power socket. The equipment is placed on or near a charging pad (which is plugged into the main electrical system) so that an electrical charge can pass safely between the two. Both devices contain induction coils that create an electromagnetic field when they get near each other, allowing electricity to pass from the pad to the equipment. The method eliminates the need for mechanical charging contacts as well as rooms or spaces in a facility dedicated to charging—and it promotes opportunity charging, allowing equipment to run continuously. This cuts back on maintenance, saves time, and ultimately speeds up warehouse operations, proponents of the technology say.



"The motivation [for this technology] is robustness," explains Matthieu Ebert, executive in charge of the U.S. office for German wireless charging technology company Wiferion, which designs charging systems for equipment that runs on electric batteries. "You don't want unplanned downtime. Wireless charging takes away the potential failures involved. There are no contacts, no objects to crash into, no wear and tear—overall, it's really taking away the pain points of users who require 100% robust operation of their [equipment]."

There are a handful of companies in the industrial wireless charging space today, with most focused on solutions that power autonomous mobile robots (AMRs) and automated guided vehicles (AGVs), as Wiferion's products do. Those solutions are becoming more advanced and gaining traction industrywide, and the experts say the next step is applying wireless charging to traditional forklifts, which they agree is a more difficult nut to crack, for many reasons. Still, technology advances are creating that possibility and laying the groundwork for a more wireless future for the warehouse.

#### AUTONOMOUS EQUIPMENT DRIVES ADOPTION

Ebert says a wireless charging "breakthrough" has occurred in the AMR and AGV market, explaining that a growing number of end-users and equipment manufacturers are now using or testing Wiferion's technology. To date, he says, the company has sold about 8,000 of its wireless charging systems—mostly in Europe but in the United States as well—and works with more than 150 equipment manufacturers who install the systems in their vehicles and robots. The technology provides AMRs and AGVs with an "in-process" charging solution that consists of a wall box and charging pad that can be installed in suitable locations in the warehouse (usually somewhere along the route the robot or vehicle travels), and a rechargeable power source that is contained inside the robot or vehicle. There are no contacts, plugs, or sliding connections for the charger. The AMRs and AGVs automatically start to charge when they approach the charging point, which they can do from any direction.

The lack of mechanical contacts makes the system practically maintenance-free—no oxidized plugs or broken cables to worry about.

Harold Vanasse, senior director of marketing/motive power global for Pennsylvania-based EnerSys, agrees that lower maintenance and reduced wear and tear are driving forces behind wireless charging for industrial applications today. This is largely due to the tight labor market and a resulting need to implement systems that rely less on human labor for routine tasks. He says rising use of automated equipment like AMRs and AGVs in the warehouse creates a natural fit for wireless charging, which can be integrated into the equipment and linked to the software and control systems that power the trucks, promoting a seamless charging process that takes the human element out of the equation.

EnerSys—which provides a range of stored energy solutions for industrial equipment, including lead-acid batteries, lithium-ion (Li-ion) batteries, thin plate pure lead (TPPL) batteries, chargers, and related accessories—launched its own wireless charging solution during the ProMat material handling show in Chicago earlier this year. The charger is chemistry-independent and capable of charging lead-acid, TPPL, and Li-ion batteries, according to Vanasse. Not surprisingly, the initial focus of the charging solution is the automated slice of the market. Like Wiferion, EnerSys is working with equipment manufacturers to integrate the charging system into AMRs and AGVs.

"You're seeing [wireless charging] in automation because everything is programmed in. It's an integration effort—you're not buying a charger like you do for a flooded [lead-acid battery] product," he says. "The allure is that this process is more reliable and doesn't require any maintenance. If we're talking about this at this time next year, there will be a fair amount of these on the market—and certainly in two years."

Interest is expected to grow from there.

"Eventually—and we're already working on this—you'll see this move to manual vehicles," he says.

Ebert agrees and points to the entry of EnerSys and other long-established battery makers into the market as industrywide validation for the potential of wireless charging to change the industry.

"We've shown that there are some very, very good use cases. If a large corporation like EnerSys jumps on the train, we are on the right path," Ebert says, emphasizing the use cases in robotics and automated trucks. "As soon as a truck is automated, you don't want to have humans do the charging—so [it makes sense that] deployment will happen via the automated trucks. This spread with automated lift trucks is then going to generate understanding and accep-

tance of the technology, and then it will circle back to traditional [equipment]."

#### NEXT STOP, MANUAL FORK TRUCKS

The experts say there are hurdles to applying wireless charging to traditional, manually operated forklifts, including issues like placement of the charging pads and vehicle alignment. Those challenges are easily solved in automated systems by programming stops into the vehicle's control system, but with a human operator, much more is left to chance. At least one wireless charging company is already addressing those issues, though.

Vermont-based Resonant Link was founded in 2018 with the goal of creating wireless technology that works to seamlessly and continuously power the electronic devices that have become integrated into modern life. The company targets four key industries: medical devices, electric vehicles, consumer electronics, and industrial and material handling equipment. Its material handling efforts are focused on powering traditional and automated lift trucks, according to CEO Grayson Zulauf, who says alignment is one of the company's key differentiators.

"For wireless charging, you need to align the two sides of



the system when you park, [and] that's the limit of the area you can charge in," he explains. "With the other chargers in the industry, you need to park within a [roughly] two- by two-inch target area, which is really hard to line up if you're driving a large reach truck."

Resonant Link's technology allows for a 10- by 12-inch charging area—about five times larger.

"That's what ... sets us apart," he adds. "You want to park and walk away, not repark to get into this super-small area."

Zulauf says the company has two primary goals for industrial and material handling customers: to reduce the cost of running their fleet and provide the safest charging system possible. Resonant Link's chargers feature live and foreign object detection, and are built to work in harsh conditions, including those with uneven surfaces and wide temperature ranges. The company is working with a handful of equipment manufacturers and end-users who are testing the technology, and Zulauf says he expects to begin running pilot programs at customer sites by the end of this year, scaling up to full sites in 2024, with the technology being offered as a standard option on lift trucks in 2025.

"I think there will be an even faster adoption [of wireless charging] for automated vehicles, but there are fewer of those out there," he says. "Right now, we are very focused on [traditional] lift trucks."

He says he views the industry's trajectory in three stages: First, replacing wired chargers with wireless systems for lower maintenance and a better operator experience; next, putting them in the places where vehicles are working—in racks, at the ends of aisles, and at loading docks, for example; and third, integrating wireless charging throughout a facility, making the warehouse "an integrated energy management system."

Energy management is a key term, and one that leaders at Quebec-based forklift battery manufacturer UgoWork say is a guiding light across the industry. Company co-founder and CEO Philippe Beauchamp agrees that wireless charging for material handling is in the very early stages, but says there is a thirst for new technologies that makes this an exciting time to work in the stored energy solutions business.

UgoWork does not offer wireless charging today but rather, goes to market with an energy-as-a-service business model designed to take over battery maintenance and management for its warehousing customers so that they can focus on getting products out the door faster. It's the same principle, he says: removing barriers, streamlining operations, and creating a more efficiently run warehouse.

"Customers everywhere want to try new things; they're open minded, and it's fantastic," Beauchamp says. "UgoWork and the wireless technology companies, we're really working on the same thing: simplifying the charging process."

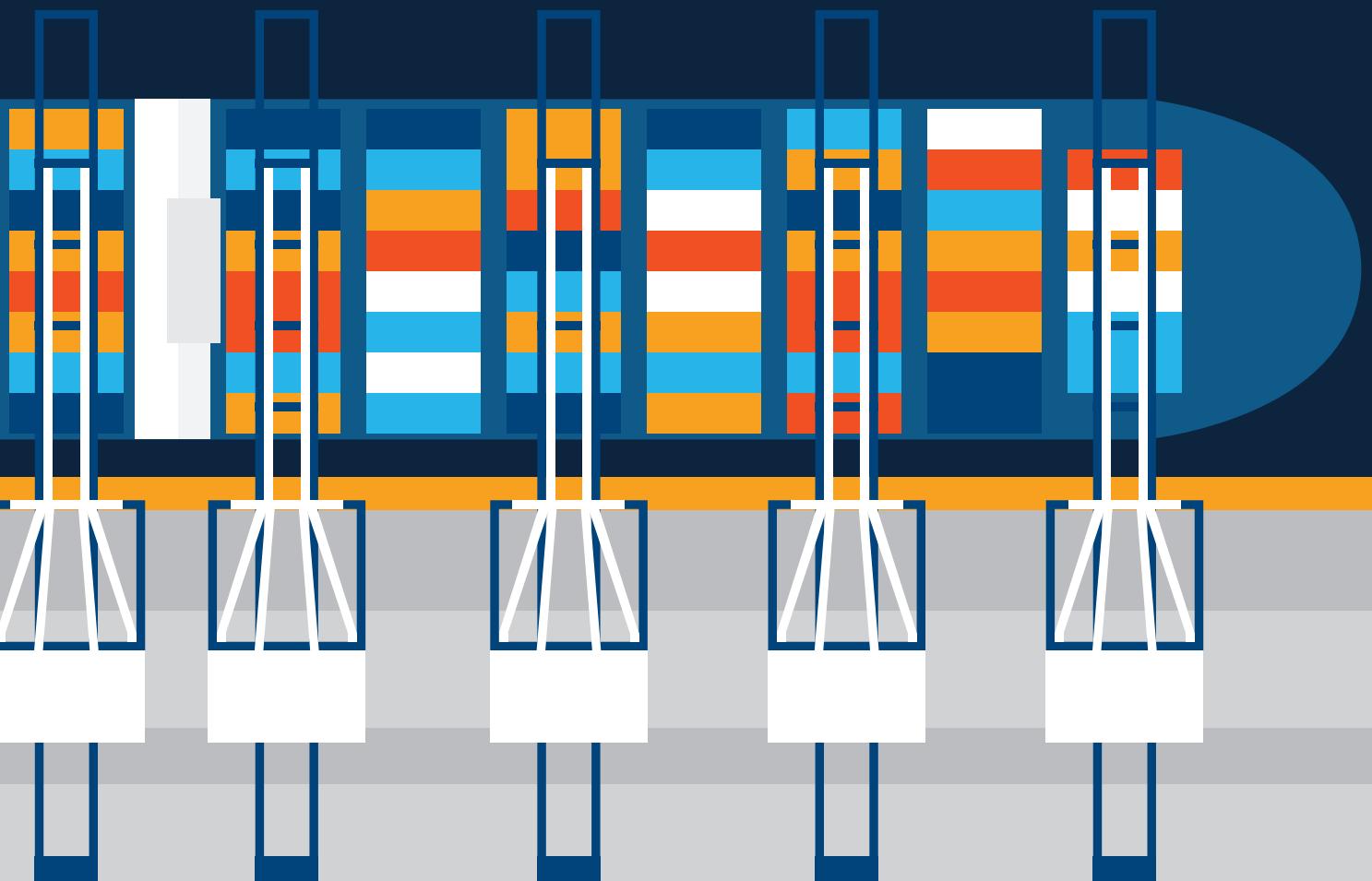
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In our continuing series of discussions with top supply-chain company executives, Shane Smith shares what clients are looking to achieve in their warehouse operations and the technologies they plan to deploy.

[artificial intelligence] and ML [machine learning] technologies, increased automation, and wider investment in blockchain.

**Q: WHAT ARE CUSTOMERS LOOKING TO ACHIEVE IN THEIR DISTRIBUTION OPERATIONS?**

A: Customers in distribution operations usually have several goals, such as increasing operational efficiency, improving inventory management and accuracy, achieving precise order fulfillment, trimming labor costs, and realizing better space utilization. Currently, space utilization and labor management are a couple of the biggest undertakings for distribution operations, with many warehouses failing to leverage all of the space available to them and struggling to attract, retain, and properly manage talented associates.

**Q: WHAT TECHNOLOGIES ARE DISTRIBUTORS CURRENTLY SEEKING IN ORDER TO MAXIMIZE PRODUCTIVITY?**

A: Productivity is a top priority for distributors, especially in today's climate. Some of the main technologies they are pursuing are warehouse automation, internet-of-things solutions, data analytics and business intelligence, cloud-based solutions, and mobile technologies. These types of solutions are meant not to replace

# Shane Smith of enVista

*Shane Smith is the senior vice president of supply chain solutions at enVista, a supply chain and enterprise technology consulting firm. Smith brings to this position some 30 years of experience as an executive supply chain leader in the design and administration of systems in distribution and manufacturing environments. He works with enVista's key clients to improve processes with cutting-edge software solutions.*

**Q: HOW WOULD YOU DESCRIBE THE CURRENT STATE OF THE INDUSTRY?**

A: The WMS [warehouse management system] market has undergone rapid growth and innovation in recent years. As e-commerce and supply chain complexity increase, so does the need for effective and adaptable WMS solutions.

There are many challenges in the industry, from warehouses being strained for space to labor issues to customer satisfaction. Thus, companies are turning to automation and systematic tools to help drive more efficiency, reliability, and accuracy in their businesses.

These challenges are leading to the digital transformation trend—wider adoption of no-code/low-code platforms, increased migration to the cloud, leveraging AI

human labor, but rather to augment it and allow for higher levels of efficiency, productivity, and safety in the distribution center.

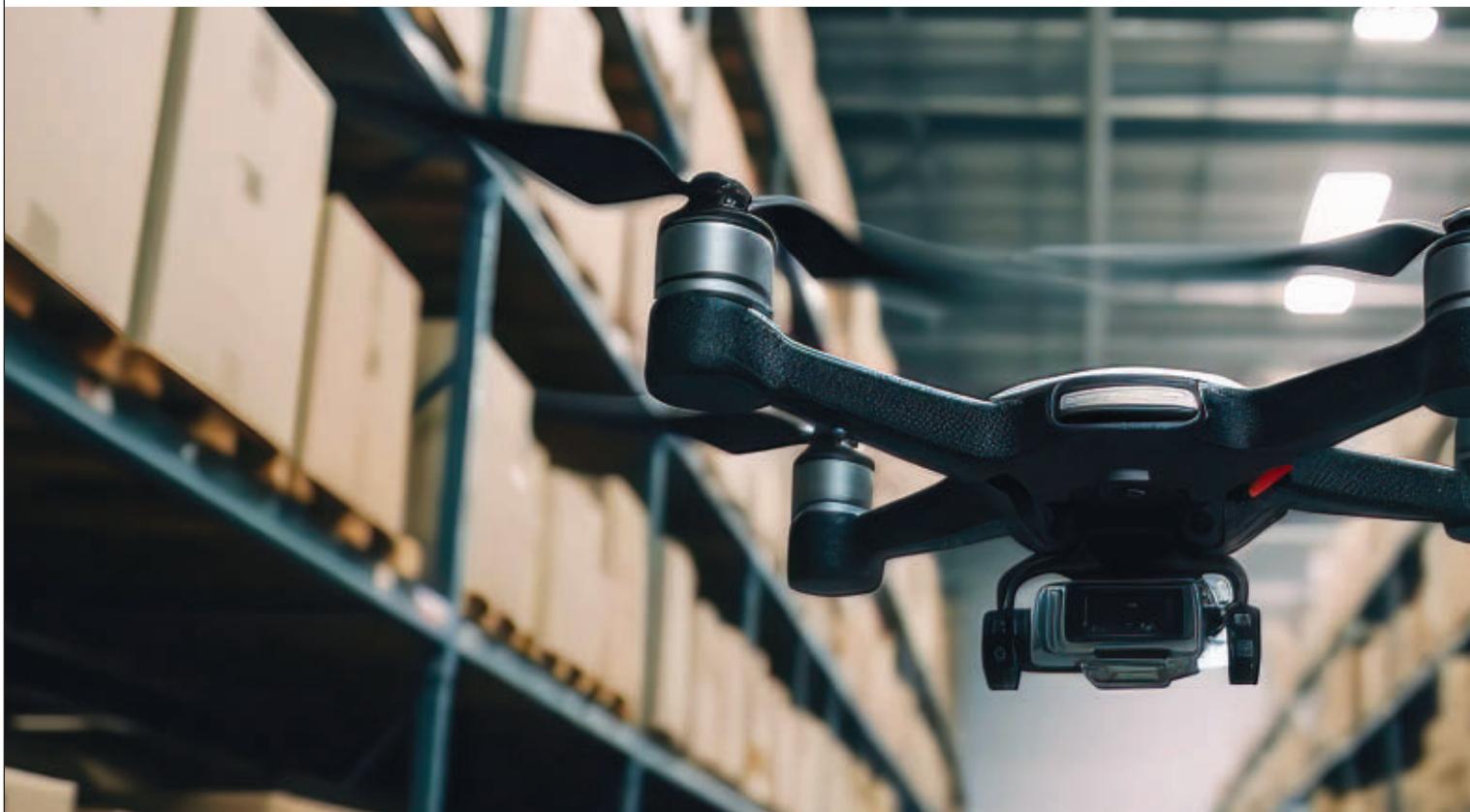
**Q: HOW ARE YOUR SUPPLY CHAIN CLIENTS DEALING WITH THE WORKER SHORTAGE?**

A: To cope with the lack of available workers, supply chain clients have been adopting various strategies. Some of these include workforce management optimization, automation and labor management systems, training and upskilling programs, the use of staffing agencies, and incentive and retention strategies. Many are considering incentive-based pay and other employee engagement programs to improve retention, since finding new labor is so challenging right now.

**Q: WHAT ARE THE ADVANTAGES OF TAKING A VENDOR-AGNOSTIC APPROACH IN DEVISING SOLUTIONS FOR YOUR CLIENTS?**

A: Taking a vendor-neutral approach to supply chain solutions enables us to deliver several benefits to our clients. We create value by tailoring solutions based on the specific requirements of each client, thus selecting the best solution for them.

In addition, because we are looking at multiple vendors, clients are receiving a fair and impartial assessment of the tools available to them. A vendor-neutral approach also helps us stay current with the latest trends and innovations across different supply chain solutions, ensuring that the client has access to the most advanced solutions. Aside from these main benefits, there are several others, such as cost efficiency, long-term partnerships, and a focused approach. □



# Taming inventory with high-tech tools

**Advanced software solutions that incorporate artificial intelligence, digital twins, and more are helping companies get a better handle on inventory management.**

THE SUPPLY CHAIN CHAOS OF THE PAST FEW years has shone a light on inventory and the need for shippers and third-party logistics service providers (3PLs) to get it just right in order to best manage their supply chains and maintain high service levels. Technology continues to be a key tool in addressing the challenge, and two recent projects illustrate ways in which organizations are using advanced software and hardware solutions to increase accuracy and optimize inventory levels. Here's how.

## AI TO THE RESCUE

Third-party logistics service company Barrett Distribution

Centers was looking for a way to improve inventory monitoring across its warehouse network. The company operates more than 25 facilities nationwide, serving clients across a range of industries—including apparel and footwear, health and beauty, consumer packaged goods, and consumer electronics. Associates had been using forklifts and scanners to manually track and manage inventory, a process that was becoming increasingly difficult due to the 3PL's growing e-commerce volumes, which require close inventory tracking to fill individual shipments. Managers wanted to augment the manual process with a technology-based solution that could reduce the company's reliance on both



equipment and labor.

The answer came from Pittsburgh-based warehouse automation company Gather AI, which combines artificial intelligence (AI), machine learning (ML), and analytics to create a drone-powered inventory monitoring system that is helping users improve inventory accuracy, boost productivity, and improve the bottom line. To launch the project, the tech firm digitally mapped Barrett's warehouses so that the drones could fly autonomously and so that Barrett could use them to conduct regular inventory monitoring, a process that would cut back on the number of forklifts and warehouse associates required for cycle counting.

Under the new process, the drones photograph pallet locations in the warehouse, and Gather AI's ML algorithms then decipher the bar codes and text from the images, comparing what's read with what's logged in Barrett's warehouse management system (WMS). Warehouse managers can view results from a web dashboard.

Gather AI says the process is 15 times faster than manual cycle counting and provides real-time access to inventory data—which allows warehouse managers to more easily identify and address inventory exceptions.

Barrett is using the drone solution at six of its warehouses and is seeing strong results, according to Jim Rapoza, vice president of business process optimization. Since imple-

menting the project in 2022, at one location alone Barrett has reallocated six cycle counters to more value-added tasks and has eliminated \$250,000 in material handling equipment. On top of that, inventory accuracy has improved by up to 70%, according to both Barrett Distribution and Gather AI.

### SLOTTING FOR OPTIMIZATION

Medical device manufacturer Boston Scientific needed a better way to manage the growing number of stock-keeping units (SKUs) at its nearly 600,000-square-foot distribution center (DC) in Quincy, Massachusetts. Upwards of 10,000 SKUs are housed in a variety of racking systems at the DC, including bulk floor pallet locations for the fastest-moving items, case flow racks, and wire deck shelves. DC associates primarily perform individual picks—also called “each picks”—to fulfill orders, which can require considerable travel throughout the facility. Company leaders wanted to create a more flexible inventory slotting solution that would address those issues and lead to more effective, efficient overall operations.

Boston Scientific turned to logistics automation and software company Fortna and its OptiSlot DC software to tackle the problem. But they had to put some initial slotting strategies into place first. A “slot” is a shelf or portion of a shelf where items sit in the warehouse. Slotting is the process of determining the best slot for all of the items a warehouse ships. For example, fast-moving items may be placed in easier-to-access locations—perhaps closer to the loading dock for faster loading.

Leaders at Boston Scientific began by splitting the DC into four areas and optimizing inventory zone by zone. Next, products were grouped and slotted for easier picking, putaway, and replenishment. They also looked for opportunities to improve overall picking productivity by:

- Optimizing pick paths to reduce travel throughout the DC;
- Reducing the need for workers to bend and reach by implementing “golden zone slotting,” a technique in which high-velocity items are assigned to locations at chest height, making it easier for associates to pick quickly while also supporting more ergonomic picking;
- Improving space utilization and reducing the number of overall replenishments by improving the slotted capacity in active forward pick and minimizing the overstock in reserve.

The next step was applying Fortna's slotting optimization software, which allowed project leaders to factor in goals, rules, and constraints to meet objectives; weigh the impor-

tance of each objective; and compare potential scenarios. OptiSlot does this by the use of digital-twin technology, which allows managers to replicate their warehouse layouts and view or test potential results before dedicating the labor to implement a particular solution.

Ultimately, Boston Scientific selected an optimization scenario that grouped certain specialty items together; implemented golden-zone slotting to boost productivity and improve ergonomics; and moved its fastest “cube-moving” items to larger, prime locations that would reduce travel and

replenishment. Cube movement refers to high-volume items that take up more space in the warehouse, according to Fortna’s vice president of software, Will King. Moving such items from a smaller space to a larger one—from a hand-stack area to a pallet location, for example—reduces the need to replenish those areas frequently, cutting back on work and raising productivity.

Applying the process to a portion of the warehouse in 2022 yielded immediate results, including:

- A reduction of 135 replenishments per week, or about 12% of the total;
- Improved space utilization, with an overall storage capacity increase of 1.6%;
- A reduction in travel distances that amounted to nearly 1 million fewer feet traveled within the DC per week.

Project manager Dan Hamilton, of Boston Scientific, touted the results in a statement describing the project.

“Prior to [implementing] OptiSlot, our slotting tool was a very cumbersome, manual Excel-based tool—so we were limited with what we could achieve,” he said. “With OptiSlot, we’re now able to seamlessly layer in as much data (including custom data) from as many different sources as we want, and the flexibility and adjustability of the tool allows us to analyze as many different rules, goals, constraints, and ‘what if’ scenarios as we want. Slotting-move plans—spanning up to thousands of moves—and comparative reports come back in a matter of minutes, with planned-out multi-chain move sets ready to go. We’ve only just begun to scratch the surface of the capabilities of this tool, and we are already reaping considerable operational benefits.”

More companies are likely to follow suit as inventory remains a key issue across the logistics landscape. This past spring, the Logistics Managers Index, which tracks industry performance across a range of measures, showed contraction in inventory levels for the first time in more than six years and predicted lower levels over the next 12 months—signs that companies are working through the glut of inventory that plagued the industry in early 2022 and are trying to get a better handle on it in the years ahead. □

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# How Lixil transformed its global supply chain operations



No company has been immune to the supply chain disruptions that have rocked the business world over the past two and a half years. This is the story of how one company—water and housing product manufacturer Lixil—responded to this upheaval by transforming its supply chain to be more agile and efficient while still maintaining its focus on the customer and sustainability.

WHETHER TRIGGERED BY PANDEMIC-FUELED SHUTDOWNS, geopolitical conflicts, or extreme weather events, global supply chain disruptions have had a profound impact on businesses around the world. According to research conducted by *The Economist* in 2021, supply chain disruptions have produced “substantial” financial costs (averaging 6% to 10% of annual revenues) as well as reputational costs—in terms of customer complaints and damage to brand reputation—as companies have struggled to maintain supplies of their goods. Indeed, firms were as likely to report damage to brand reputation as increased costs of operations.<sup>1</sup>

As businesses work to repair fractured supply chains, some are struggling to accommodate increasing stakeholder demands for sustainability, flexibility, and customization. Oftentimes they also lack the talent

*This story first appeared in the Quarter 2/2023 edition of CSCMP’s Supply Chain Quarterly, a journal of thought leadership for the supply chain management profession and a sister publication to AGILE Business Media’s DC VELOCITY.*

they need to do so, making them increasingly vulnerable to future disruptions. While these challenges are certainly formidable, they also invite tremendous opportunity to design and implement global supply chain models that are more agile, sustainable, and technologically enabled.

At Lixil, we have not been immune to these disruptions. As a water and housing products manufacturer, we faced a general shortage of many critical materials at the start of the pandemic, the main example being lumber. We use lumber for packaging and pallets, and when its supply dropped, the cost was driven up exponentially and leadtimes extended dramatically. Another example is when a heavy winter storm in Texas in 2021 shut down some of the refineries and impacted the material availability of plastics and other components. Further, ocean shipping delays over the last few years have impacted the availability of finished products and assembly parts being imported from Asia to North America and Europe. (For more information about Lixil and its supply chain, please see the sidebar “About Lixil.”)

Even prior to the pandemic, however, we understood the importance of designing a supply chain operating model that could withstand global economic and political shocks, while mitigating systemic shutdowns to our operations. We sought to standardize, integrate, and scale supply chain operations across our business, and we’ve made good progress; but, like every other business on a road to transformation, we still have work to do.

To start, we provided our geographic regions more flexibility to account for differences in supply and demand and customer needs. In response to increasing consumer demand for sustainable practices and social and ecological accountability, we also placed sustainability front and center in consideration of how we source materials to manufacture toilets, faucets, and showers, and in the processes we use to drive greater energy efficiency. Additionally, we’re enhancing customer collaboration and improving our capabilities in forecasting supply and demand—all of which are putting us in a stronger position to achieve long-term, sustainable growth.

Using the key learnings and insights gleaned during our ongoing supply chain transformation, we outline below



our main tips and takeaways for other supply chain leaders navigating economic, geopolitical, and climate dynamics.

## 1. PRIORITIZE AGILITY AND EFFICIENCY

Every business is different, but global manufacturers that operate across a variety of markets will certainly benefit from increasing their operational agility and efficiency. Disruptions wrought by extreme weather events, geopolitical volatility, and inflationary pressures underscore the

need for multiple sourcing and distribution centers (DCs). Should operations within a specific region falter, having various touch points will minimize risk of delays. They also help cut leadtimes, as customers can rely on quicker, local shipments, rather than depending on one central distribution center.

We have built our supply chain to be agile and have added multiple DCs, sourcing centers, and manufacturing facilities across regions such as the Americas, Europe, and Asia that together create a truly global network we can rely on. For example, in the past, there were certain finished goods

that we were only able to source from suppliers in Asia. But now, by expanding our manufacturing and sourcing capabilities, we are able to make those same products in Mexico, providing multiple sourcing options and shorter leadtimes.

We have also improved our supply chain agility by improving visibility across our end-to-end supply chain, particularly for our ocean freight. For example, in the last few years, we have implemented origin and destination cargo management for better end-to-end ocean freight visibility from the time the container is picked up at origin to the time it gets delivered to the DC at the destination. This includes visibility into value-added services like selecting the ocean carrier with the best rate for that route, tracking service metrics by ocean carrier, consolidating freight at origin, and transloading at destination, to name just a few.

## 2. IMPROVE PLANNING

At Lixil, we use the Supply Chain Operations Reference (SCOR) model as a way to help us think about and optimize our supply chain. The SCOR model defines the four key processes making up supply chain management as “plan, source, make, and deliver.” In this model, planning

is the most critical element, serving as the anchor for all other phases of the process. If we do not plan properly and with careful consideration, the model will fail. We dedicate significant time and resources to the planning phase, considering product demand first and foremost, and adjusting subsequent operations accordingly.

Recently, we have taken several steps to improve our planning process by increasing the amount of collaboration between the sales and operations sides of our business. We have found that by doing this, we enhance our strategic planning and provide better value to customers and suppliers, while advancing company growth and profitability.

One way we have accomplished this is by revamping our sales and operations planning (S&OP) process to ensure that participants are actively engaged and contributing to the decision-making process. To create this active engagement, we have reduced the number of participants, making sure they are the decision-makers for their function and are investing the quality time needed to make those informed decisions. These efforts have improved collaboration and communication across sales and operations. Because of our collaborative work, we have been able to better identify any supply constraints and adjust product mix and supply sources to avoid customer disruption.

We also redesigned demand planning to be a commercial sales/merchandising-driven function. In the past, the supply chain team had full responsibility for demand planning, which was giving us less-than-desirable results. We realized that we needed to better bridge the commercial and operations sides of our business and address information gaps in demand planning. To accomplish this, we formed a “Commercial Demand Planning” organization within our merchandising division. We structured our commercial demand planning organization so that it was aligned with our sales and merchandising channel structure and with our key accounts.

Our demand planning process is multilayered, as follows: (1) We begin with a review by customers, (2) then review by channel, (3) then review by business unit. This approach begins at the earliest stage, when the sales team has the closest connection with the customers. In this way, we are enabling our sales team, whose members work with customers daily, to increase collaborative demand planning. We are focusing more on getting customers to share point-of-sale data with us, which will enable us to collaboratively plan with the customers. This reorganization helped to improve collaboration with customers, key account planning, and demand forecasting accuracy.

As a result of these efforts, we are now able to provide even higher-quality service with lower inventory levels. However, our work does not end here. We are always striving to continuously improve our planning process with the objective of optimizing service levels, cost, and working capital.

### 3. IMPLEMENT AND SCALE SUSTAINABLE PRACTICES

Another way that Lixil is transforming its global supply chain operations is by increasing its focus on sustainability. Social responsibility and environmental stewardship have a positive impact on our communities and the planet, and are consistent with the desires and expectations of our customers, employees, and investors. Moreover, environmental, social, and corporate governance (ESG) initiatives have become commonplace at many companies, with some organizations seeing negative legal, financial, and regulatory consequences if their ESG standards are inconsistent with stakeholder expectations. Thus, by meeting ESG standards (and ensuring that their suppliers do so as well), companies reduce their exposure to disruption from these negative consequences.

It is important that an organization’s commitment to its sustainability practices be all-encompassing and embedded

## About Lixil

For more than 150 years, Lixil Corporation has engineered water and housing products, such as faucets, toilets, and showers. Our brands include American Standard, GROHE, DXV, and INAX. Our customers not only encompass individual homeowners but also businesses and corporations seeking to upgrade their water technology and housing fixtures.

Our supply chain aims to deliver consistent leadtimes and the lowest landed costs. To achieve this goal, we take advantage of our manufacturing facilities in North America, which represent over 80% of Lixil’s supply. We distribute to our customers from four distribution centers (DCs) in the U.S., two DCs in Mexico, and one DC in Canada. Currently, our manufacturing teams are also creating capability in our North America plants for greater nearshoring.



in the fabric of its supply chain operations. As such, our purpose—to make better lives a reality for everyone, everywhere—is enabled by our unwavering commitment to a sustainable business, extending beyond Lixil to our suppliers and partners, including architects, designers, general contractors, and building owners. They, too, want partners that prioritize and demonstrate a commitment to sustainability, making these relationships mutually beneficial for our businesses, the environment, and the communities we operate in. We believe that the way a company addresses sustainability will determine how effectively it differentiates itself in the market, increases value for investors, and appeals to employees and prospective employees.

For these reasons, Lixil promotes responsible procurement across our supply chain. We base our procurement processes on the “Ten Principles of the United Nations Global Compact” in the four areas of human rights, labor, environment, and anti-corruption as well as our own Procurement Principles and Procurement Compliance Policy.

Our Lixil Code of Conduct also specifies the ethical behavior that is expected of all of our staff, and it includes the prohibition of bribery. Meanwhile, our Supplier Code of Conduct, compiled in 2018, requires that suppliers respect human rights, observe international labor standards, conserve the global environment, and ensure fair business conduct. At the same time, we request that suppliers demand equivalent standards from their own suppliers.

Additionally, in January 2020, we created Green Procurement Guidelines outlining our policy and standards for procuring parts and materials that exert the least impact on the environment. In collaboration with our environmental management department, we ask suppliers to understand and support our environmental initiatives and procurement activities based on these guidelines.



ity, while adding in multiple distribution centers closer to customers. We are on a journey of continuous learning and adaptability, as are our colleagues in the manufacturing and supply chain space. By embracing these lessons and applying them in the transformation of global supply chains, businesses will become far more resilient, and gain a competitive advantage in the marketplace. □

#### Note:

1. The Economist Intelligence Unit, *The Business Costs of Supply Chain Disruption*, 2021: [https://impact.economist.com/perspectives/sites/default/files/the\\_business\\_costs\\_of\\_supply\\_chain\\_disruption\\_gep\\_1.pdf](https://impact.economist.com/perspectives/sites/default/files/the_business_costs_of_supply_chain_disruption_gep_1.pdf)

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# APPLICATIONS

*A look at how DCs are using equipment and services to rev up their operations*

## Tech that saves time

A tractor manufacturer automates its inbound logistics operations with intelligent technologies from SAP.

INDIA-BASED SONALIKA INTERNATIONAL TRACTORS Ltd. has ushered in a new era of digitalization thanks to intelligent technologies from European software company SAP.

The tractor manufacturer streamlined its inbound logistics operations by adopting an automated accounts payable (AP) solution that has replaced formerly manual processes with a productivity-enhancing digital approach, company leaders say.

“Implementing AP automation is a significant milestone in our digital transformation journey,” Sunil Kumar, group CFO and project owner at Sonalika, said in a statement describing the project. “This has streamlined our financial processes and will improve efficiency. This investment in automation technology will enhance inbound logistics efficiency, reducing manual effort and errors.”

Specifically, the automated solutions from SAP have simplified Sonalika’s gate entry and accounts payable processes, eliminating time-consuming tasks and boosting overall operational effectiveness.

### ELIMINATING STEPS AND SAVING TIME

The Sonalika/SAP project was implemented with the help of Crave InfoTech, an independent software solutions vendor and SAP reseller. Working together, the three companies decided on a solution that eliminates the paper-based inbound logistics processes in use at the manufacturing company. Essentially, the solution automates the invoicing entry process for more than 800 vendors by “templatizing” invoice formats. Supplier invoices are now scanned and stored in a document management system (DMS) folder, for instance. Gate entries are automatically posted via the use of optical character recognition (OCR) technology and business process automation tools that are part of the SAP Business Technology Platform (BTP). On top of that, accounts payable processes such as invoice posting are managed via SAP Intelligent Robotic Process Automation (iRPA) tools.

All of these tools help companies build, manage, and deploy applications and connect data and business processes on one integrated platform.

“Implementing RPA with OCR in our gate entry and invoice process ... has been a [transformational] project, and we are a front-runner in utilizing these cutting-edge [technologies] in [the] tractor industry and large manufacturing [environment],” said Vikas Yadav, head of IT applications and digitalization at Sonalika, in the statement. “I appreciate our implementation partner Crave InfoTech for [its] BTP expertise, impeccable efforts, and unwavering support, which made the AP automation effortless and efficient.”

The partners also introduced a token system at the gate and implemented digital stamps for material document creation, actions that automated formerly manual steps and reduced execution time from two to three hours to just 10 to 15 minutes. This has essentially eliminated redundant and error-prone manual activities, bringing greater accuracy and efficiency to operations across the board, the companies said.

The digitalization efforts have also given the company real-time visibility into its inbound logistics processes, enabling better planning, execution, monitoring, and management control. Dashboards with comprehensive insights have allowed Sonalika Tractors to make data-driven decisions and ensure streamlined operations, according to Crave InfoTech.

“We constantly strive to innovate and push the boundaries of process automation, utilizing the power of BTP and industry-specific intelligence,” Shrikant Nistane, CEO of Crave InfoTech, said in the statement describing the project. “Leveraging our expertise in digital supply chain and enterprise intelligence, we were able to bring this Industry 4.0 and RPA vision to reality.”



# Fashion company leaves the “driving” to robots

When it needed to streamline its plant operations last year, apparel company Bespoke “hired” 15 AMRs to move, trace, and direct workpieces to their destinations, freeing human workers for higher-value tasks.

EACH YEAR, MANUFACTURERS AND RETAILERS look for ways to fill customer orders faster and more accurately. Yet all too often, they encounter a host of obstacles—everything from labor shortages to changing industry standards and regulations to ever-tightening timelines—especially during peak season.

These were some of the challenges facing Bespoke Manufacturing Co. (BMC), a manufacturer of primarily high-end women’s wear. Last year, the company was looking to modernize its operations by moving from a traditional “design-make-sell” manufacturing model to an on-demand model. The objectives: to eliminate waste, unify its people and processes, increase efficiency and productivity, and scale up manufacturing operations to meet growing demand.

For help with the project, the company turned to warehouse automation specialist S&H Systems, mobile computing company Zebra Technologies, and Fetch Robotics—a maker of autonomous mobile robots (AMRs) acquired by Zebra in 2021. As BMC explained to its new partners, the end goal was to improve its workflow visibility from the initial printing and cutting of the fabric to the final production phase of packing and shipping.

## COMBINING TECH OFFERS NEW POSSIBILITIES

In order to realize its vision, Phoenix-based BMC would need a solution that allowed its front-line workers to focus on production as the company scaled up its on-demand business. The key to that, it concluded, would be delegating its workflow logistics to automated equipment. After weighing various options, the company decided to go with

Zebra’s end-to-end industrial and robotics automation solution—which combines the Fetch AMRs with Zebra’s fixed industrial scanners—to help move, trace, and direct workpieces to their destinations along the production line.

“Embracing automation turns inefficient processes into optimal workflows … [in order] to achieve increased accuracy, enhanced throughput, reduced labor needs, faster onboarding of new workers, more data and consistent outcomes, and flexible new solutions,” explained Cody James, strategic account manager at Zebra Technologies/Fetch Robotics, in a webinar.

To design and integrate the automated solution, BMC worked with systems integrator S&H Systems, a member of Zebra’s PartnerConnect program. In the end, BMC deployed 15 of Zebra’s Fetch Robotics RollerTop AMRs (robots with conveyors on top of them) and more than 200 of Zebra’s FS20 and FS40 fixed industrial scanners to move totes throughout the manufacturing process and keep track of them as they work their way through the sewing stations.

## THE TRANSFORMATION JOURNEY

The first step in BMC’s manufacturing transformation was to eliminate 90% of the fixed conveyor belts operating throughout its factory. Next, more sewing machines were added to the roughly 50,000-square-foot Florence, Alabama, facility. Once the floor space was reconfigured to accommodate the new process, the robots were brought in, the scanners were installed, and technicians began preparing the system to go live.

Today, when a customer orders a piece of clothing online, the order is fed into the company’s enterprise resource



planning (ERP) system, which immediately sends instructions to the automated cutting station, where the fabric is cut by a robotic arm. A picker then places the fabric pieces into a bar-coded tote and deposits it on a conveyor. As the tote makes its way down a 50-foot conveyor belt, its bar code is read by a scanner, triggering a process whereby the system identifies what additional items need to be added to the tote—for example, the garment might need a 12-inch zipper, a hook-and-eye, a clasp, and three labels. The tote then travels to an automated vertical material rack (VMR) that will present those additional items (zipper, labels, etc.) to the picker to add to the tote.

Once all the necessary items have been collected, a picker places the tote on a short-line conveyor belt. When the tote reaches its destination, a scanner reads its bar code, which prompts the system to call over an AMR to pick up the tote and autonomously deliver it to as many sewing stations as required. Fixed industrial scanners register the totes at each location, tracking the position of every garment in the plant. Once the order is complete, the robots autonomously deliver the finished goods to packing and shipping stations.

#### FLEXIBILITY FOR THE FUTURE

Shifting to a highly automated manufacturing operation has been a game changer for BMC. To begin with, the

company realized an immediate 33% improvement in space efficiency by removing most of its fixed conveyor belts. This added space now gives BMC the flexibility to accommodate future seasonal demands, explained J. Kirby Best, president and chief executive officer of BMC, in the webinar.

But the benefits didn't stop there; the company has enjoyed productivity gains as well. The system's FetchCore Software, which triggers the robots to execute a workflow, can make adjustments to the AMRs' routes across the plant floor in seconds. According to BMC, the facility has tripled production capacity with the new automated equipment—which allows it to make up to six dresses per minute.

And by producing garments on demand, BMC has eliminated material waste throughout the manufacturing process, minimizing the amount of fabric that ends up in landfills each year.

Most significantly, perhaps, the added flexibility has made a world of difference for employees. The automated systems have streamlined BMC's workflow processes, allowing workers to focus on picking and hand sewing tasks rather than moving products among 120 different stations. "With Zebra's unique solution, we are able to realize significant savings in labor time while retaining an ability to instantly scale up to meet seasonal demand surges and seamlessly modify our production," Best said in a press release. □



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**Rugged 5G mobile computer:** Chainway, a developer of data-capture devices, has introduced the MC50, a 5G high-performance mobile computer. Suitable for use in the logistics, warehousing, transportation, and manufacturing sectors, it features the Android 12 operating system, a Qualcomm Snapdragon processor, a six-inch high-definition display screen, and a 5000mAh high-capacity removable battery.

The MC50 supports a variety of data acquisition functions, including high-performance bar-code scanning, and is designed to withstand drops, bumps, scratches, and water splashes in day-to-day operations, the manufacturer says. (Chainway, [www.chainway.net](http://www.chainway.net))



**Smart robot charging solution:** Wiferion, a developer of industrial wireless charging and power solutions, has launched a cloud-based solution for smart robot charging, the etaHUB charge optimization platform. The new app helps companies utilize their fleets more efficiently by reducing energy consumption, extending battery life, and increasing the productivity of automated guided vehicles (AGVs) and autonomous mobile robots (AMRs) through real-time intelligent charging management.

With smart robot charging, battery operating life can be extended up to 50% by intelligently controlling the charging cycles and the charging and discharging rate, the company says. The system also provides precise data about the duration of a charging process and tracks when each robot will be at a charging point in the future. Smart charging also makes it possible to plan the charging times of mobile robots to correspond with times when power costs are lowest (i.e., charging batteries at night when the need for power is lower). (Wiferion, [www.wiferion.com](http://www.wiferion.com))

**RTLS tags for delivery drivers:** Cognosos, a provider of real-time asset location solutions (RTLS), has introduced the "Driver Tag," a new offering that delivers visibility into driver activity throughout the outbound supply chain. The addition of the driver tag to Cognosos' lineup of purpose-built asset tags adds key behavioral data for automotive OEMs (original equipment manufacturers) and third-party logistics service providers (3PLs), the company says, adding that this data can help outbound logistics providers improve their operations.

With Bluetooth technology embedded in the driver tag, the new badges (which are worn by drivers tasked with moving vehicles from manufacturing to distribution) sync with the asset-tracking tags inside the vehicles, tying vehicle movement data to a specific driver.

With the deployment of the innovative driver tags, users can not only review movement data of specific vehicles but also iden-

tify who is responsible for each movement and the length of time each driver takes to perform a given vehicle delivery. In addition, data can be aggregated to understand movement throughout yards and lots holistically and uncover trends and patterns around drivers, vehicle types, shifts, time of day, weather conditions, and more. (Cognosos, [cognosos.com](http://cognosos.com))

**Versatile freight-tracking solution:** Warp, a tech-enabled freight network specializing in middle-mile solutions, has introduced a new suite of tracking tools to help shippers track their freight at the truck, pallet, and parcel level, including temperature monitoring. With DirecTrack, Warp is bringing real-time location updates to the movement of goods throughout the shipment's journey as part of a fully managed solution.

Through use of a small tag that can be applied directly to a box or pallet within the shipment, real-time temperature monitoring of fresh freight is available directly in the Warp platform. Even if goods change trucks or carriers during their journey, the same tag remains with the load throughout the process, giving shippers insight into temperature data from origin to destination.

All cross-dock facilities that partner with Warp are provided with cross-dock software available on both mobile and desktop devices accompanied by a Zebra scanner and printer. Using the software and hardware provided, Warp is able to provide real-time updates as freight is scanned into the facility, is loaded onto a truck, and exits the facility for its destination.

The system also features a driver app that provides shippers with the exact location of their load while it's in transit. In addition, shippers are able to view status-event timestamps, indicating when a driver is enroute, arrives, and departs from the pickup and delivery locations. (Warp, [www.wearewarp.com](http://www.wearewarp.com))

**Mobile cart system:** Roeq, a developer of mobile robotic equipment, has added the Roeq TMC130 solution to its product line. This top module and cart system, designed for the Omron LD-90x mobile robot, can increase payload from 198 pounds up to 287 pounds. Developed in collaboration with Omron, the TMC130 solution expands options for customers to use the compact LD-90x robot for higher-payload missions, even where space is constrained.



Like other Roeq cart systems, the TMC130 can dock to the cart from both ends and offers the flexibility of free space pickup and dropoff, making it easy to adapt to almost any workplace needs. The TMC130 includes mounting holes for accessories such as light towers and comes with Roeq Assist software for easy setup with the Omron mobile robot. (Roeq, [www.roeq.dk](http://www.roeq.dk))

**Tires for low-intensity material handling:** Engineering group Trelleborg has launched its XP700 tire for low-intensity material handling applications. The new XP700 tire features deep lugs for enhanced traction and a compact lateral-block design to minimize vibration. Engineered to match the needs of low-intensity material handling operations, the XP700 delivers reliability, adequate load capacity, and good steering ability, the company says.



The tire also incorporates Trelleborg's easy-to-recognize, user-friendly labeling system to help customers select the right tire for their operations. (Trelleborg, [www.trelleborg.com](http://www.trelleborg.com))

**Truck refrigeration units:** Carrier Transicold has rolled out two single-temperature electric truck refrigeration units as the foundation of its new Supra eCool series. The Supra eCool electric units cover 14- to 28-foot Class 5 to 7 straight truck applications and are designed for fleets seeking regulatory compliance or simply cleaner, more sustainable options. The engineless Supra e9 and e11 units provide comparable refrigeration performance to Carrier Transicold's diesel-powered Supra S8 and S10 units.

Supra eCool units feature efficient zero-emissions performance. By utilizing a direct-current electric power source, the units eliminate the fuel consumption, emissions, and noise associated with engine-driven systems. In addition, they use R-452A, an environmentally sustainable refrigerant with a global warming potential (GWP) that's 45% lower than the traditional refrigerant used in transport applications.

Users can add the company's telematics solution—Lynx Fleet—for remote monitoring of temperatures, location, movement, battery state of charge, and system operating performance. A service plan is required with the telematics solution. (Carrier Transicold, [www.carrier.com](http://www.carrier.com))

**Driver safety program:** Cover Whale Insurance Solutions Inc., a commercial trucking insurance provider, has released the next phase of its Driver Safety Program, the company's signature loss-prevention initiative. Cover Whale has formed strategic partnerships with telematics and dashcam providers Nexar, Netadyne, and Orion Fleet Intelligence, along with its ongoing partnership with Waylens, to strengthen its data collection and machine-learning capabilities.

Cover Whale's Driver Safety Program aims to make roads safer for America's professional drivers and for those with whom they share the road. The program consists of three components that work together to help assess and address risk: cameras, coaching, and coverage. The dashcams and associated telematics capture certain unsafe driving events, such as speeding, hard turning, and thousands of other data points, while providing important artificial intelligence-driven situational context to the data.

Based on that data, Cover Whale sends coaching communications to drivers to positively reinforce safe driving practices, reduce unsafe driving events, and help them avoid claims in the future. Dashcam footage can also support claims settlement,

including protecting and exonerating drivers in the event of an accident in which they are not at fault. Most importantly, the data enables Cover Whale to offer the most competitive insurance rates in the trucking industry and keep drivers on the road earning, the company says. (Cover Whale, [www.coverwhale.com](http://www.coverwhale.com))

**Electric forklift:** Forklift manufacturer Combilift has launched the Combi-Cube, a new electric forklift that incorporates technological and design features designed to improve handling and enhance driver comfort.

The truck comes in a vibrant new color—dubbed "Combi-green"—to make the vehicle more visible. The company says it has also added a number of ergonomic features to the truck. As a result of those enhancements, the driver's position in the center of the cab offers generous room and excellent all-round visibility. The angle of the telescopic steering column can be adjusted, and the Grammer MSG65 seat, combined with hydraulic cabin mounts, offers a comfortable ride. An adjustable armrest is mounted to the seat suspension, which incorporates a multifunction joystick and an LCD color touchscreen.

Other new features include a larger rear wheel and rubber tires on all three wheels, which allows the model to be used outdoors on semi-rough terrain. (Combilift, [www.combilift.com](http://www.combilift.com))

**Enhanced warehouse sorting technology:** Automation specialist Opex Corp. has expanded the capabilities of its Sure Sort Warehouse Automation technology to incorporate radio-frequency identification (RFID) scanning in a bid to increase operational speed and efficiency. A scalable, high-throughput sorting system, Sure Sort is a warehouse automation solution for distribution centers, retail stores, and third-party logistics service companies looking for a cost-effective and accurate solution for their order handling, cross-docking, and reverse logistics needs.

Though the technology is applicable to a variety of industries, Opex says it added the RFID scanning option to help apparel manufacturers and retailers. Bar codes sometimes get hidden in garments and require additional operator handling, which slows operations. Because RFID employs radio waves, scanning does not require a visual connection. (Opex, [www.opex.com](http://www.opex.com))



**Adjustable-speed drive:** Siemens has introduced a new high-performance adjustable-speed drive with built-in Clean Power technology that's designed to reduce harmonics without the need for an AC line reactor or DC choke. The Sinamics G220 utilizes less space than previous models and is designed for easier integration into a production or processing machine, the company says.

Sinamics G220 drives feature a digital twin in Startdrive, the drives-commissioning tool from Siemens. This allows the behavior of the drive to be tested and optimized before the hardware is available. The drive has an integrated web server for commissioning, which eliminates the need to install software or an app on a computer or mobile device. (Siemens, [www.siemens.com](http://www.siemens.com))



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**Caster wheels for material handling carts:** Caster Concepts Inc., a provider of heavy-duty industrial casters, has expanded its Twergo caster product line. Designed to reduce strain injuries, Caster Concepts' Twergo uses a unique dumbbell design to minimize caster wheel friction. According to the company, this design reduces the force required to push or pull materials or completed manufacturing assemblies by up to 50% compared to traditional industrial caster designs.



The Twergo product line consists of three models: Twergo, Twergo Lite, and Twergo Xtreme. Twergo is the original ergonomic caster wheel and is the ideal wheel for heavier manual and powered applications, according to the company. Twergo Lite is a single two-inch wide wheel version of the Twergo wheel and utilizes the same patented face design to reduce initial and continuous push force. The third wheel, the Twergo Xtreme, is designed to move more weight without compromising safety. (Caster Concepts, [www.casterconcepts.com](http://www.casterconcepts.com))

**Freight sustainability tool:** Supply chain services company Redwood Logistics has launched a sustainability tool, Redwood Hyperion, to provide shippers with visibility into their freight emissions. The new freight sustainability solution supports shippers of all sizes in their eco-initiatives through a suite of carbon emissions visibility, offsetting, reduction, and reporting tools that help them meet their sustainability goals, the company says.

Redwood Hyperion supports carbon-neutral initiatives by automating detailed load-by-load emissions calculations, facilitating carbon credit purchases toward verified projects, and providing shareable progress reporting. The tool includes a comprehensive suite of carbon tracking and data features through RedwoodConnect, Redwood's iPaaS (integration platform as a service) platform that facilitates the integration of digital and physical supply chains. (Redwood Logistics, [www.redwoodlogistics.com](http://www.redwoodlogistics.com))

**Drop-in Li-ion battery for lift trucks:** The Raymond Corp., a developer of material handling equipment and intralogistics solutions, has expanded its "Energy Essentials Distributed by Raymond" portfolio with the launch of a 48-volt drop-in lithium-ion battery (48V LIB). The new battery is available in multiple configurations to meet a variety of customer demands, the manufacturer says.

Designed as a direct plug-and-play replacement for conventional lead-acid batteries, the new 48V LIB fits lift trucks with battery compartments of 13 inches and larger, and requires no additional modifications, according to the company.

The battery provides for continuous data exchange between Raymond lift trucks and chargers, giving customers easy access to critical operating metrics—and to the Raymond portfolio of telematics and intralogistics solutions. (Raymond Corp., [www.raymondcorp.com](http://www.raymondcorp.com))

**AR glasses for tech support:** Cimcorp, a specialist in automated material handling equipment, has added a new product to its "Success Services" after-sales service offerings: CVision Assisted Reality (AR)-glasses. The glasses allow the company's Success Services team to assist customers in real time, without the need to travel or arrange onsite meetings. Backed by support from Cimcorp experts, customers can minimize unplanned downtime and maximize the performance of their automated material handling equipment.

Intuitive and easy to use, the hands-free CVision AR-glasses power bidirectional communication between the Cimcorp customer and system support. Cimcorp's experts can see the problem firsthand through a live video feed from the customer's site—minimizing the risk of misunderstanding and making it easier for the expert to grasp and solve the issue. The support team member can also add hand-drawn marks to the image to provide further instructions or clarification. This reciprocal transmission of information allows for high-quality and rapid support, the company says.

The AR glasses include language translation, image annotation, and noise-canceling technology. (Cimcorp, [www.cimcorp.com](http://www.cimcorp.com))

**Very-narrow-aisle electric forklift:** Noblelift North America has added the OPX 33 very-narrow-aisle (VNA) heavy-duty electric forklift to its product line. The OPX VNA forklift operates within a 67-inch aisle width, has a 3,300-pound capacity, and is engineered for heavy-duty, high-productivity applications. It reaches a height of 374 inches and offers high-speed lifting and lowering.



The OPX 33 has a centralized control console, with fingertip proportional controls that provide smooth and accurate operation, according to the manufacturer. It's equipped with a multifunction LCD instrument panel that displays the steering-wheel position, battery power, power alarm, fault code, working time, driving speed, and other helpful information. The forklift also has a large-capacity battery that's capable of multiple shift operation and reduces maintenance time, as well as a low-noise gear pump to ensure quiet lifting. (Noblelift North America, [www.nobleliftna.com](http://www.nobleliftna.com))

**Stainless-steel column lift:** Superlift Material Handling Inc. has introduced a lift specifically designed to meet the strict hygiene requirements of the pharmaceutical industry. The Stainless-Steel Pharma Column Lift is made of high-quality 304L and 316L stainless steel, has a load capacity of up to 3,300 pounds, and can lift and transport columns up to almost 20 feet in height, according to the manufacturer. The lift features a user-friendly interface with easy-to-use controls.

Designed to meet all relevant standards and regulations, including GMP and FDA requirements, the lift reduces risk of contamination by minimizing the areas where bacteria and other contaminants can accumulate, the company says. (Superlift Material Handling Inc., [www.superlift.net](http://www.superlift.net))



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# Beyond Picking Rates: Achieving Total Warehouse Optimization with Goods-to-Person Solutions

Order spikes, quick economic changes, and rising wages in a tight labor pool are accelerating the need for companies to invest in warehouse technologies that have the flexibility to adapt. Goods-to-Person solutions automate the storage, picking, moving, and sorting of goods and are proven to reduce dependency on manual labor in the picking process.

However, when considering new warehouse automation, it's important to think beyond associate picking rates and take a holistic approach that will improve distribution center shipping rates. **The popularity of new Goods-to-Person (GTP) solutions** reinforces the importance of designing a unified warehouse solution. Without a unified pick, pack, and ship operation, a single solution operating alone can risk isolating the functions of your fulfillment center, turning them into disconnected islands of automation.

When designing automated fulfillment operations, the sum of the parts is rarely greater than the whole unless a single WES-WCS system can drive orchestration across automation solutions. It takes more than a GTP system to gain the full advantages of a warehouse automation investment.

In this webinar, you will learn how Numina Group's Real-time Distribution System (RDS) Warehouse Execution and Control Software and Geek+ create superior Goods-to-Person systems that incorporate parallel picking processes with pack-and-ship automation that yield the highest ROI.

#### Key takeaways include:

- Design-first approach - collecting data upfront to determine if GTP is right for your operation
- Scalable GTP automation - latest advancements in mobile robotics and GTP for storing, picking, moving, and sorting
- Unified warehouse solution - implementing an automated pick, pack, and ship order fulfillment operation that reduces labor reliance and provides the highest ROI

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**Automated case picker:** Stöcklin Logistics, a developer of material handling equipment, has unveiled its automated CasePicker. Designed to address the specific product logistics challenges facing produce shippers, the Stöcklin CasePicker was engineered to offer a completely automated solution for distribution centers serving hundreds of retail outlets.



With freshness zones from 4 degrees Celsius (39.2 F) to 14 degrees Celsius (57.2 F), the CasePicker features a depalletizer with intelligent control that manages a unique special gripper with a suction strip and underride plate to ensure gentle and reliable case picking. In addition, the gripper allows different returnable and disposable containers to be picked immediately after one another.

The CasePicker is completely modular and scalable. Depending on the required performance, it can be upgraded by adding new modules and used in combination with additional Stöcklin equipment such as the company's FTS Eagle-Ant picking and conveying equipment. In addition, the modules are simple to integrate into existing buildings and structures as well as capable of docking with existing systems, the manufacturer says. (Stöcklin Logistics, [www.stoecklin.com](http://www.stoecklin.com))

**Spend-management tool:** Resilinc Corp., a supply chain monitoring, mapping, and resiliency specialist, has launched its Spend Analytics solution. This spend-management tool associates an organization's spend to a specific supplier, category, or part. The data, which are available alongside other supplier risk insights within the Resilinc platform, provide companies with full visibility into both direct and indirect supplier spend across the organization as well as the unique ability to query deeper analytics. Armed with this information, and coupled with an extensive set of quantified supplier risks, practitioners can make strategic, data-backed decisions when it comes to mitigating supply chain risk, negotiating terms, or engaging with suppliers.

The Spend Analytics solution has the ability to integrate into any third-party solution like ERP, control tower, or spend management systems via a secured API. (Resilinc, [www.resilinc.com](http://www.resilinc.com))

**Rugged vehicle-mount terminal:** JLT Mobile Computers, a developer of computing solutions for demanding environments, has unveiled an upgraded version of its powerful and versatile JLT6012 vehicle-mount terminal. Designed for warehousing, manufacturing, and even port and yard applications, the upgraded JLT6012 terminal features 5G and Wi-Fi 6 for faster low-latency connectivity and enhanced data security and integrity tools.

Features include JLT's PowerTouch PCT screen technology, which delivers an almost indestructible operator interface without sacrificing user input capabilities—even when the operator

is wearing gloves, the manufacturer says. The unit also offers an auto-dimmable high-bright display to enhance the user experience. (JLT Mobile Computers, [www.jltmobile.com](http://www.jltmobile.com))

**Mobile palletizing lift station:** Autonomous mobile robot (AMR) developer Robotize has introduced the Mobile Lift Station, a palletizing lift station that's designed to make palletizing not only easy and safe, but also mobile. The design allows for easy and safe access to the pallet during the palletizing process and also allows the pallet height to be continuously adjusted from 14.9 inches to floor level—ensuring continuous optimum ergonomic working height.

As its name suggests, the lift station is designed to be mobile, meaning that it can be quickly moved to another part of the work floor, with or without a payload. (Robotize, [robotize.com](http://robotize.com))

**Quad mast options for UniCarriers forklifts:** Mitsubishi Logisnext Americas Group, the manufacturer and provider of UniCarriers forklifts across North, Central, and South America, has introduced new Quad Mast options for the PD, BXC, Platinum II Cushion, and Nomad Series forklifts. This new offering replaces current third-party-supplied two-ton Quad Masts with masts that will be designed, fabricated, and assembled in-house.

UniCarriers Forklift's Quad Mast provides the highest reach due to its four sets of moving rails, according to the manufacturer. These are designed for very high stacking in specialized warehousing and other applications. With the new Quad Masts manufactured in-house, Mitsubishi Logisnext Americas has more flexibility to meet customers' unique requirements, the company adds. (Mitsubishi Logisnext Americas Group, [www.logisnext-americas.com](http://www.logisnext-americas.com))

#### Two-in-one tablet/laptop device:

Zebra Technologies Corp., a digital solutions and mobile computing specialist, has introduced the ET6x series of rugged Android tablets. Designed to help frontline workers in warehouses, manufacturing plants, ports, and yards be more productive and efficient, the ET6x series features a heated touch-screen and vehicle dock for forklifts and other material handling vehicles.



The ET60 and ET65 are Zebra's first two-in-one Android tablets with a friction-hinge keyboard that transforms the tablets into a laptop to make heavy data entry easy in the office and in the field. The products feature consumer styling that can handle harsh indoor and outdoor environments from sub-zero cold to extreme heat, according to the company. The tablets are dustproof, corrosion-proof, and tested for vibration, thermal shock, and solar radiation. (Zebra Technologies Corp., [www.zebra.com](http://www.zebra.com)) □

# FACING CHALLENGES?



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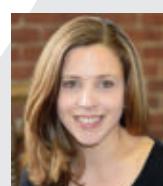
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## Cautious, yet hopeful

RECENTLY, A GOOD FRIEND ASKED ME IF I WAS CONCERNED about my job considering the rise in generative artificial intelligence (AI) tools like the ChatGPT chatbot. I won't deny that I'm curious as to whether this technology will get to the point where it can write a column for a business publication like *DC VELOCITY*. Will it be able to capture a writer's voice, differentiate between fact and fiction, source check, and most importantly, generate original new content?

Concerns about AI affecting job security are not unique to our industry. Take, for example, the strikes by the Writers Guild of America and SAG-AFTRA, the union that represents Hollywood actors and performers. Both unions are concerned about the use of AI, how it may impact jobs, and what it means for their members' financial future.

As with any newer technology, the potential benefits must be weighed against the potential risks. At the time of this writing, the United Nations Security Council had just held its first meeting on artificial intelligence, and the European Union had already proposed a regulatory framework for AI. While we might be going about our day-to-day business and wondering how AI might affect our job responsibilities, we can't overlook the global impact that AI technology will have on our governments, businesses, and more.

The time is now to ask hard questions and to consider developing road maps for the use of AI. On July 21, in fact, the White House announced "that some of the nation's most advanced AI companies [had] entered into a voluntary agreement to manage the risks associated with the fast-evolving technology."

I'm grateful that those in charge are ready to address and plan for whatever risks AI may present. After all, the stakes are high. For instance, what if malicious code is picked up by AI technology and shuts down supply chains for a significant length of time? At this point, it remains to be seen how companies will balance the reputational and business risks that arise when AI does not function as intended against the technology's potential benefits.

Luckily, the supply chain world has a lot of experience with embracing new technologies, adopting them, assessing risks, and dealing with unexpected complications. In addition, the National Institute of Standards and Technology (NIST) has developed an AI Risk Management Framework (AI RMF) to assist organizations in identifying and evaluating the new risks associated with the use of AI and to build trustworthy systems. With all the resources at our disposal, we have the opportunity to learn and grow with this technology.

I encourage all of us to learn more about AI—the good, the bad, and the ugly. I am anxious to see the positive impacts AI can have on our industry. If all the press releases that hit my inbox touting the benefits of various AI-enabled technologies are any indication of AI's potential to transform our supply chains, then I expect to learn a lot over these next few years. In fact, I expect to hear more about AI's impacts this fall at the CSCMP (Council of Supply Chain Management Professionals) Edge Conference and Supply Chain Expo in Orlando, Florida. (If you haven't signed up to attend, visit [cscmpedge.org](http://cscmpedge.org) to register.)

As for my friend's question about my job, I'm cautiously optimistic about the effect AI will have on my career. I'm not overly worried that my job will be eliminated anytime soon, but I remain both cautious and curious.



Diane Rand

Associate Editor



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